DOE/RL-94-88

IMPLEMENTATION PLAN

for the

TANK WASTE REMEDIATION SYSTEM ENVIRONMENTAL IMPACT STATEMENT

Richland, Washington

December 1995

Prepared By:

U.S. Department of Energy
Richland Operations Office

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ACRONYMS AND ABBREVIATIONS

CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DST	double-shell tank
EA	Environmental Assessment
Ecology	Washington State Department of Ecology
EH	Office of Environment, Safety, and Health
EIS	Environmental Impact Statement
EM	Environmental Management
EM-PEIS	Programmatic Environmental Impact Statement for Environmental Management
FM	Field Management
FR	Federal Register
GC	General Counsel
HLW	high-level waste
IMUST	inactive miscellaneous underground storage tank
LLW	low-level waste
NEPA	National Environmental Policy Act
PEIS	Programmatic Environmental Impact Statement
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
RL	U.S. Department of Energy, Richland Operations Office
SEPA	State Environmental Policy Act
SIS	Safe Interim Storage
SST	single-shell tank
TPA	Tri-Party Agreement
TSD	treatment, storage, and/or disposal
TWRS	Tank Waste Remediation System
USC	United States Code
WAC	Washington Administrative Code

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1.0 INTRODUCTION

The U.S. Department of Energy (DOE) proposes to retrieve, pretreat, treat, immobilize, and store or dispose of radioactive, hazardous, and mixed waste currently or projected to be stored in 177 underground storage tanks, approximately 40 inactive miscellaneous underground storage tanks (IMUSTs) that were associated with tank farm operations, and 1,929 cesium and strontium capsules currently on loan or stored at the Hanford Site. These activities will be conducted at the Hanford Site near Richland, Washington (Figure 1.1).

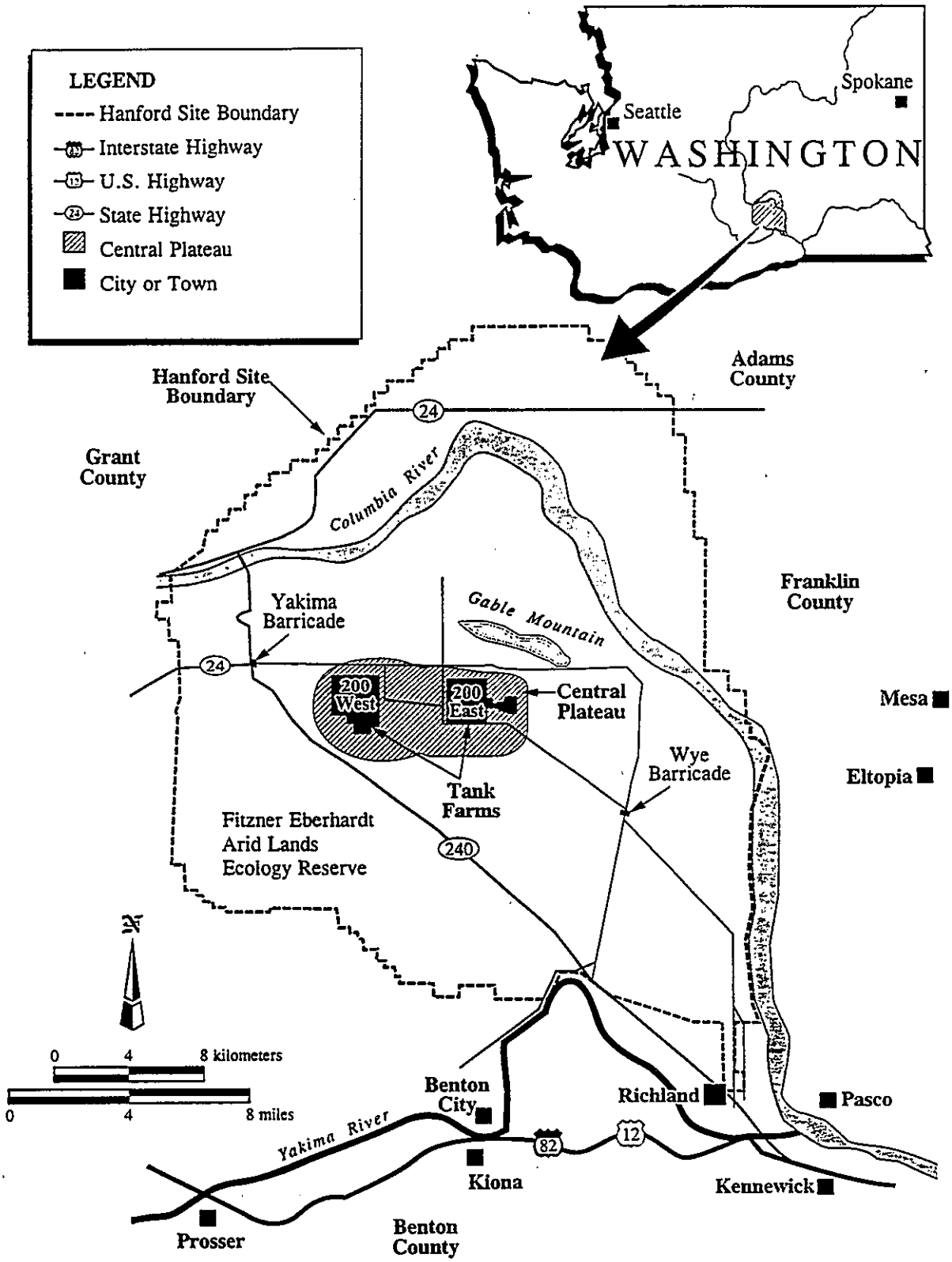
DOE and the Washington State Department of Ecology (Ecology) need to implement permanent solutions that reduce risks to the public, Site workers, and the environment. The actions implemented must comply with Federal and State of Washington environmental laws and DOE policies. The solutions that are selected must also be implemented within the context of the Hanford Federal Facility Agreement and Consent Order (also called the Tri-Party Agreement [TPA]). The TPA was signed by DOE, Ecology, and the U.S. Environmental Protection Agency to govern waste management and cleanup of the Hanford Site. Permanent solutions to tank waste risks are one of the major goals of the TPA.

On January 28, 1994, DOE announced its intent to prepare an interim action Environmental Impact Statement (EIS) for the resolution of safety issues associated with the Watchlist tanks and this Tank Waste Remediation System (TWRS) EIS in a Notice of Intent, published in the Federal Register (FR) (59 FR 4052). The Notice of Intent is included as Appendix B. In the Notice of Intent, DOE stated the purpose and need for the proposed action; identified the scope of the proposed action and reasonable alternatives to be evaluated in the EISs; and invited the public, interest groups, Tribes, and agencies to provide comments on the scope, issues, and alternatives to be considered in the EISs. In addition to the proposed action as stated in the Notice of Intent, DOE is considering the privatization of Hanford's tank waste remediation activities.

The proposed action is subject to the National Environmental Policy Act (NEPA) and Washington State Environmental Policy Act (SEPA). Both acts require consideration of potential environmental impacts in the decision-making process. Ecology and DOE signed a Memorandum of Understanding on February 15, 1994 subsequent to the publication of the Notice of Intent to jointly prepare the EIS for the proposed TWRS action. The Memorandum of Understanding between DOE and Ecology is included as Appendix A. The co-preparation of this EIS will streamline the environmental review process while ensuring compliance with applicable Federal and State laws, regulations, and policies.

A 45-day scoping and public participation process began January 28, 1994 and ended on March 15, 1994. During the scoping period, DOE and Ecology conducted five public meetings and accepted both oral and written comments. The scoping process provided opportunities for the public to review information and comment on the proposed action. DOE and Ecology considered both oral and

Figure 1.1 Hanford Site Map



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written comments on the scope of the proposed action, alternatives, and environmental issues to be considered in the TWRS EIS before issuing this Implementation Plan.

The preparation of the interim action, Safe Interim Storage (SIS) Draft EIS has been completed (DOE/EIS-0212). The remainder of this Implementation Plan focuses exclusively on the TWRS EIS.

Transcripts from the EIS scoping period, comment letters, and other related reference documents are available for public inspection at the locations listed in Table 1.1. To request copies of the Implementation Plan, call the Hanford Cleanup Toll-Free Line at 1-800-321-2008 or write to either:

Carolyn Haass
DOE TWRS EIS NEPA Document Manager
DOE Richland Operations Office (RL)
P.O. Box 1249
Richland, Washington 99352

Geoff Tallent
Ecology TWRS EIS Project Lead
Washington State Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

This Implementation Plan was prepared to comply with DOE's requirements for implementing the Council on Environmental Quality (CEQ), NEPA regulations. The Implementation Plan records the results of the scoping process and details DOE and Ecology's plan for preparation of the TWRS EIS. This Implementation Plan provides a description of issues and alternatives to be analyzed. It also explains how those issues and alternatives have been revised or supplemented in response to comments received from the public and others during the EIS scoping process. Accordingly, this Implementation Plan addresses the following:

- TWRS EIS preparers and decision-makers, EIS schedule, background of the TWRS program, points-of-contact, regulatory framework applicable to the TWRS EIS analysis, relationship of the TWRS EIS to other relevant DOE activities, and decisions that will be supported by the TWRS EIS (Section 1.0);
- Purpose of and need for the agency action (Section 2.0);
- Public notification and scoping process, summary of comments received and their proposed disposition, and results of public participation in defining the scope, alternatives, and issues of the TWRS EIS (Section 3.0);
- The scope, alternatives, and environmental analysis in the TWRS EIS (Section 4.0);
- Consultation with other agencies, Tribes, and the public (Section 5.0);
- Contractor disclosure statements (Appendix E); and
- Appendices A through D, and F and G contain additional information relevant to the implementation of the TWRS EIS.

DOE and Ecology may amend the Implementation Plan to incorporate major changes in the scope, content, alternatives, or schedule.

Table 1.1 DOE Reading Rooms and Information Repositories

Location	Type of Facility	Address
Suzzallo Library	Information Repository	University of Washington Suzzallo Library Government Publications Room Mail Stop FM-25 Seattle, WA 98195 (206) 543-4664
Foley Center	Information Repository	Gonzaga University E. 502 Boone Spokane, WA 99258 (509) 328-4220, Ext. 3125
DOE Reading Room	Reading Room and Information Repository	Washington State University, Tri-Cities 100 Sprout Road, Room 130 Richland, WA 99352 (509) 376-8583
Bradford Price Millar Library	Information Repository	Portland State University Science and Engineering Floor SW Harrison and Park P.O. Box 1151 Portland, OR 97207 (503) 725-3690
DOE Freedom of Information Reading Room	Reading Room	Forrestal Building 1000 Independence Avenue, SW Washington, D.C. 20585 (202) 586-5000

1.1 PREPARERS, DECISION-MAKERS, POINTS-OF-CONTACT, AND SCHEDULE

To facilitate involvement in the NEPA and SEPA processes, the following sections identify TWRS EIS preparers, decision-makers, points-of-contact, and schedule.

1.1.1 Preparers

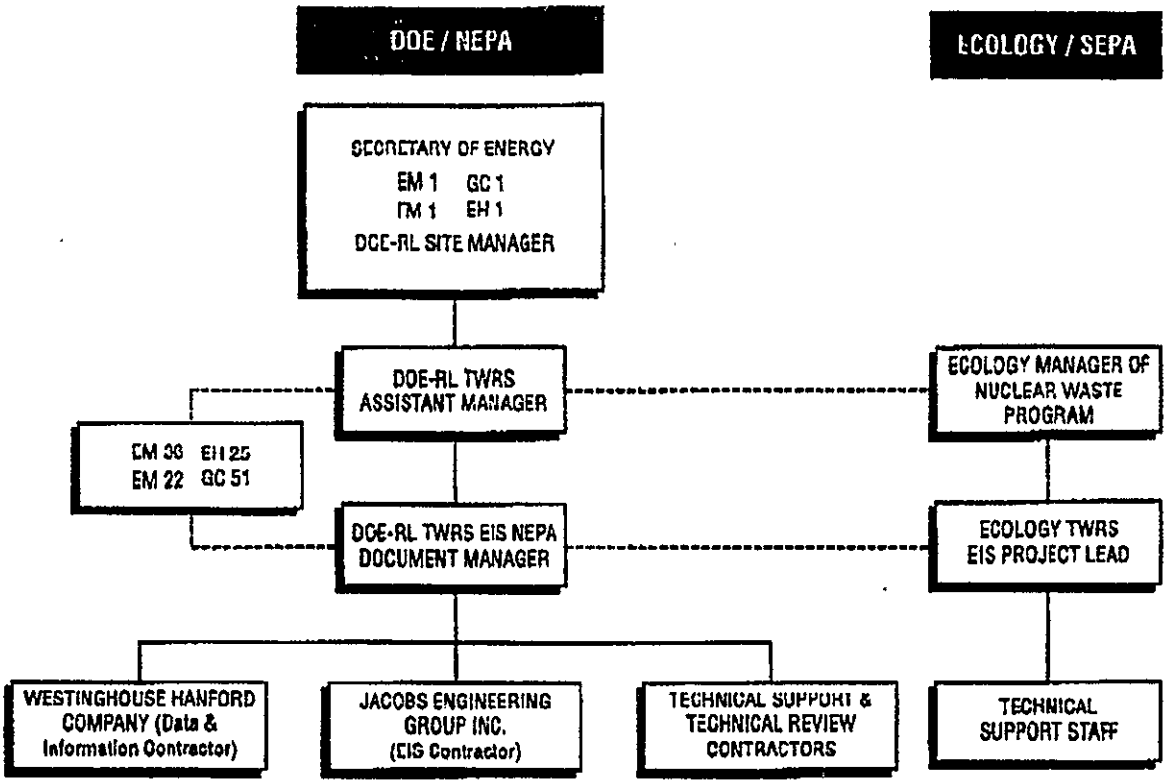
To support the preparation of the TWRS EIS, a number of DOE offices and Ecology's Nuclear Waste Program will ensure compliance with Federal and Washington State laws and regulations, and participate in reviewing and approving the EIS. The DOE and Ecology management structure for the TWRS EIS project is presented in Figure 1.2.

1.1.1.1 U.S. Department of Energy

Primary responsibility for preparing the EIS has been assigned to RL, Office of Tank Waste Remediation System. The Office of Tank Waste Remediation System is being supported in the EIS development process by a variety of DOE Headquarters and RL organizations. These include: RL TWRS Programs, Office of Chief Counsel, Office of External Affairs, and NEPA Compliance Officer and DOE Headquarters' General Counsel (GC-51), Environment Safety and Health's (EH) Office of NEPA Policy and Assistance (EH-25), Environmental Management's (EM) Office of Waste

Management (EM-30), Office of Hanford Waste Management Operations (EM-36), Office of Environmental Activities (EM-22), and Field Management (FM).

Figure 1.2 TWRS EIS Management Structure



Oversight for the preparation of the TWRS EIS is being provided by RL's Site Manager and Assistant Manager for TWRS and DOE Headquarters' General Counsel, the Assistant Secretary for EH, EM's Office of Waste Management, and the Assistant Secretary for EM. Additional support for the preparation of the EIS will be provided to RL's Office of TWRS by contractors. DOE is responsible for the scope and content of the TWRS EIS and supporting documents and will furnish appropriate direction to contractors. Information regarding contractors is provided in Appendix E.

1.1.1.2 Washington State Department of Ecology

Responsibility for preparation and oversight of the EIS on behalf of Ecology has been assigned to the Office of Nuclear Waste Program.

1.1.1.3 DOE and Ecology Resolution Process

The Memorandum of Understanding between DOE and Ecology also establishes a dispute, comment, and issue resolution process to ensure concurrence on all issues arising from scoping, hearings, correspondence, and the technical preparation of the EIS.

1.1.2 Decision-Makers

The NEPA decision-maker for the proposed TWRS action is the Secretary of Energy. Other key DOE decision-makers include the following:

- Assistant Secretary for EM, responsible for review and approval of all decision documents associated with the proposed TWRS action;
- Assistant Secretary for EH, responsible for administration of DOE's NEPA program;
- Chief Counsel, responsible for reviewing EIS-level NEPA decision documents; and
- RL's Site Manager, responsible for reviewing all decision documents prepared by RL.

The SEPA decision-maker for the proposed TWRS action is the Manager of Ecology's Nuclear Waste Program.

1.1.3 Points-of-Contact

Persons may receive information regarding the TWRS EIS by calling the Hanford Cleanup Toll-Free Line at 1-800-321-2008. DOE and Ecology have designated points-of-contact for the TWRS EIS, public involvement in the preparation of the EIS, and NEPA and SEPA decision-making process. Written correspondence should be directed to the following points-of-contact:

Carolyn Haass
DOE TWRS EIS NEPA Document Manager
U.S. Department of Energy
Richland Operations Office
P.O. Box 1249
Richland, Washington 99352

Jon Yerxa
Office of Public Affairs
U.S. Department of Energy
Richland Operations Office
P.O. Box 550 (A7-75)
Richland, Washington 99352

Geoff Tallent
Ecology TWRS EIS Project Lead
Washington State Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

Rob Harper
Environmental Outreach Specialist
Washington State Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

1.1.4 TWRS EIS Schedule

The schedule for the preparation of the TWRS EIS is presented in Table 1.2.

Table 1.2 TWRS EIS Preparation Schedule*

EIS Preparation Activity	Schedule
Notice of Intent	January 1994
Public Scoping Period	January 1994 - March 1994
Preliminary Intergovernmental Consultation	January 1994 - October 1995
Prepare Draft EIS	April 1994 - October 1995
Implementation Plan Availability	July 1995
Briefing Sessions on the Draft EIS	November 1995
Draft EIS Notice of Availability	November 1995
Distribute Draft EIS	November 1995
Draft EIS Comment Period	November 1995 - January 1996
Draft EIS Public Hearings	November 1995 - January 1996
Draft EIS Intergovernmental Consultation	November 1995 - June 1996
Prepare Final EIS	February 1996 - July 1996
Briefing Sessions on the Final EIS	July 1996
Final EIS Notice of Availability	July 1996
Distribute Final EIS	July 1996
Record of Decision Notice of Availability	August 1996
Record of Decision	August 1996
Briefing Sessions on the Record of Decision	August 1996
Mitigation Action Plan	August 1996

* Schedule as of December 1, 1995.

1.2 BACKGROUND OF TWRS PROGRAM

The Federal government established the Hanford Site near Richland, Washington in 1943. The Site was created to produce plutonium for national defense. Metallic uranium fuel was irradiated in nuclear reactors and the fuel was then chemically processed to recover plutonium. Plutonium production at the Hanford Site ended in 1988.

Processing of reactor fuel and other defense-related activities created a wide variety of radioactive, and chemically hazardous wastes, including high-level waste (HLW) stored in underground tanks. HLW is radioactive waste material resulting from the reprocessing of spent nuclear fuel, liquids produced through reprocessing, or solid waste resulting from reprocessed liquids, and requiring permanent isolation. Hanford tank wastes have been processed and transferred between tanks causing the chemical and physical characteristics of the waste to vary greatly among tanks as well as within

individual tanks. Typically, the tank waste is highly radioactive, chemically hazardous, or mixed waste. The HLW is stored in both single-shell tanks (SSTs) and double-shell tanks (DSTs).

1.2.1 Hanford Tank Waste

Hanford's tank waste volume numbers are subject to change with facility transition activities, evaporator campaigns, and tanks farm operations. Volume numbers for tank wastes presented in this document and reported in the Notice of Intent (59 FR 4052) will be updated for analysis and presentation in the TWRS EIS.

There are 149 SSTs at Hanford that have one steel wall surrounded by reinforced concrete. The tanks were constructed between 1944 and 1970, and received waste until 1980. The capacity of most SSTs is 2,000,000 liters (530,000 gallons) to 3,800,000 liters (1,000,000 gallons). The tanks are buried and covered with 2 to 3 meters (6 to 10 feet) of earth. Wastes in SSTs consist of liquids, sludges, and saltcake (i.e., crusty solids made of crystallized salts). Some of the liquids in the SSTs are contained in the pores of the sludges and saltcakes while some liquids are free-standing in the tanks.

Over the years, much of the liquid stored in SSTs has been evaporated or pumped to DSTs. The 149 SSTs store about 140,000,000 liters (37,000,000 gallons) of waste. This waste is comprised of approximately 2,300,000 liters (600,000 gallons) of free-standing liquid, 87,800,000 liters (23,200,000 gallons) of saltcake, and 47,300,000 liters (12,500,000 gallons) of sludge. Of the 149 SSTs, about one-half have leaked or are assumed to have leaked. Approximately 2,300,000 to 3,400,000 liters (600,000 to 900,000 gallons) of waste are assumed to have leaked into nearby soil.

There are 28 DSTs at Hanford, each with a capacity of approximately 3,800,000 liters (1,000,000 gallons). The DSTs were constructed between 1970 and 1986. Most of these tanks are designed to remain intact for up to 50 years of storage. DSTs have two steel containment walls; the space between the two walls is monitored for leaks. The DSTs are situated 2 to 3 meters (6 to 10 feet) below ground level. Since 1970, DOE has used DSTs and none are known to have leaked. The DSTs are used to store liquid radioactive and chemically hazardous wastes from some of the SSTs and from various Hanford Site processes.

Most of the waste is segregated and stored in tanks based on composition, level of radioactivity, or origin. The 28 DSTs now contain about 95,000,000 liters (25,000,000 gallons) of waste, with a reserve capacity of approximately 7,600,000 liters (2,000,000 gallons).

In addition to the 177 underground storage tanks, approximately 40 IMUSTs were associated with tank farm operations. Combined, these IMUSTs contain less than 2,300,000 liters (600,000 gallons) or approximately 1 percent of the total radioactive, hazardous, and mixed tank waste at the Hanford Site. The IMUSTs were part of the TWRS tank farm system that was used to transport waste from various production facilities to the tank waste farms. The IMUSTs consist of buried steel tanks used for collecting spills and leaks during waste transfer and buried concrete vaults with carbon or stainless-steel

tanks used for waste recovery. The IMUSTs range in size from 3,400 liters (900 gallons) up to 189,000 liters (50,000 gallons). Other miscellaneous underground storage tanks that were not directly part of the TWRS tank farm system will not be addressed in the TWRS EIS.

1.2.2 Encapsulated Waste

In the 1960s and 1970s, radioactive strontium and cesium were extracted from wastes in some SSTs. The strontium and cesium were then converted to salt forms and placed in double-walled capsules. The strontium capsules are 51 cm (20 inches) long and 6.7 cm (2.6 inches) in diameter, and the cesium capsules are 53 cm (21 inches) long and 6.7 cm (2.6 inches) in diameter. As many as 601 strontium capsules and up to 1,328 cesium capsules are stored at Hanford. Some capsules were shipped offsite for use as heat or radiation sources. Because the capsules were leased from DOE, they will be returned to the Hanford Site for final disposal.

1.2.3 Hanford Defense Waste Record of Decision

In April 1988, in the Hanford Defense Waste Record of Decision, DOE decided to proceed with preparing the DST waste for final disposal. The waste was to be processed in the B Plant facility to separate DST waste into two waste streams. The larger waste stream would be low-level waste (LLW), and a smaller waste stream would be HLW. LLW is radioactive waste that is not classified as HLW, transuranic, spent nuclear fuel, or by-product material and does not require permanent isolation. The LLW was to be mixed with a cement-like material to form grout. The grout was to be poured into large underground vaults, which were lined with concrete and located near the surface. There the grout would solidify.

The HLW portion was to be made into a glass-like material and poured into stainless-steel canisters (approximately 0.6 meter [2 feet] diameter by 3 meters [10 feet] long) at the proposed Hanford Waste Vitrification Plant. The canisters were to be stored there until a HLW geologic repository was available to receive this waste.

The Hanford Defense Waste Record of Decision also called for storage of cesium and strontium capsules to continue until a geologic repository is ready to receive this waste for disposal. Before shipment to the repository, the capsules would be packaged to meet the repository acceptance criteria.

Present and future tank waste was to be characterized for the identification of chemical constituents before processing for hazardous chemicals. Identification would also be conducted for other constituents that might affect glass or grout formulations. This characterization would also ensure that proper treatment, in accordance with hazardous waste regulations, occurred before disposal of the waste. In the Hanford Defense Waste Record of Decision, DOE decided to perform additional development and evaluation before making decisions on final disposal of SST waste. This development and evaluation effort was to focus on methods to retrieve and process SST waste for disposal, and on methods to stabilize and isolate the waste near-surface. The SST waste would continue to be stored and

monitored. Before a decision on the final disposal of the waste could be made, the alternatives were to be analyzed in a supplement to the Hanford Defense Waste EIS.

1.2.4 Developments Since the Hanford Defense Waste Record of Decision

Several important changes have occurred since the 1988 Hanford Defense Waste Record of Decision. These include the identification and elimination of significant waste tank safety issues; elimination of B Plant from consideration as a waste pretreatment facility; DOE, Ecology, and U.S. Environmental Policy Agency signing the TPA; delay of the Hanford Waste Vitrification Plant; and proposal to treat SST waste in combination with DST waste. Each of these are described below.

1.2.4.1 Tank Safety

On November 5, 1990, U.S. Congress enacted Public Law 101-510, Section 3137, Safety Measures for Waste Tanks at the Hanford Nuclear Reservation, which requires safety issues to be addressed concerning the handling of HLW in these tanks. In response to this legislation, the tank Watchlist was created. The Watchlist identified tanks with potential safety concerns warranting special attention.

About half of the SSTs and six DSTs were identified as having a low, but still unacceptable, potential to release HLW directly to the environment. Some of the safety issues associated with these tanks include flammable gas generation, potential explosion of ferrocyanide-containing wastes, and high organic concentrations. Actions have been taken to address each of these safety issues. Also, characterization work to achieve a full understanding of the tank waste is being addressed through the TWRS tank waste characterization process. These tanks are under operating and surveillance restrictions to minimize the potential for a release.

Flammable gases are considered to be one of the most serious safety issues at the Hanford Site. These gases are periodically released from waste, posing an ignition risk within the tank. Mitigation efforts, including vapor monitoring and mixer-pump testing, are ongoing. Hydrogen, generated by a combination of processes, is among the issues of concern. The gases in these tanks are generated continuously, and the potential exists for the gases to be trapped within the waste and periodically released. The duration of these periodic releases varies from a few minutes to several days. The 241-SY-101 tank is the most widely known and has the highest risk of generating gas; however, the recent addition of a mixer pump on July 3, 1993 has mitigated the safety concerns.

As part of a waste volume reduction program, ferrocyanide was added to tank waste to precipitate cesium-137 in the 1950s. Ferrocyanide is a chemical compound used to treat radioactive waste. A relatively high-heat producer, cesium-137 joined strontium-90 and transuranic elements in the sludge at the bottom of the tanks. Cesium and strontium are radioactive elements that can occur naturally while transuranic elements are radionuclides that are not naturally occurring. Accident scenarios were developed in which a release of tank waste might occur during mechanical retrieval due to the presence of sodium nitrate and ferrocyanide precipitates in a tank or due to excessive heat from radionuclides

content. Current indications are that the ferrocyanide within the tanks has decomposed to below a safety concern level.

DOE has taken actions to minimize immediate safety risks and recognizes the need to take both near-term actions such as the SIS EIS to resolve the immediate safety issues associated with Watchlist tanks, and long-term action to resolve the permanent waste management and disposal issues. The TWRS EIS will address permanent solutions to waste management and final tank waste disposal. The interim action SIS EIS addresses the near-term resolution of safety issues associated with tanks 101-SY and 103-SY. The TWRS EIS will incorporate the results of the SIS EIS and any other TWRS-related interim actions in the assessment of cumulative impacts.

1.2.4.2 B Plant

The B Plant is a former processing facility located in 200 East Area that now supports waste management. The Hanford Defense Waste Record of Decision designated B Plant as the facility where waste retrieved from the underground storage tanks would be pretreated. The functions to be performed at B Plant included pretreatment of liquid HLW streams to provide an acceptable feed to the Hanford Waste Vitrification Plant vitrification process, treatment of chemical sewage, treatment of nonradioactive condensate, concentration of LLW, and maintenance of facilities. Subsequent to the Record of Decision, the suitability of B Plant for the intended uses was determined to be unacceptable and B Plant was eliminated from consideration as a waste pretreatment facility (59 FR 4052).

1.2.4.3 Tri-Party Agreement

In May 1989, the TPA was entered into by DOE, Ecology, and the U.S. Environmental Protection Agency to govern waste management and cleanup of the Hanford Site. Permanent solutions to tank waste risks is one of the major goals of the TPA. In 1993, DOE proposed changes to the TPA that would integrate all Hanford tank waste remediation efforts. The three agencies began formal negotiations in May 1993 and negotiations concluded in September 1993. In addition, public meetings were held at 10 locations in Washington and Oregon to obtain the public's views on the issues for incorporation into the negotiations. The Hanford Tank Waste Task Force, a citizens' group consisting of Tribes and stakeholders, addressed the issues and advised the negotiating teams regarding issues, concerns, and values that should guide the negotiations. The revised TPA underwent a public comment period from October through December 1993. The final packages of changes, which included specifications and milestones for tank waste remediation, were approved in January 1994.

1.2.4.4 Hanford Waste Vitrification Plant

The Hanford Defense Waste Record of Decision initiated planning, design, and construction activities associated with the Hanford Waste Vitrification Plant; the plant that would vitrify HLW. Limited construction of the canister storage building, sanitary waste system, and office buildings began in 1993. However, construction was put on hold while the TPA was renegotiated. The amended TPA adopted an integrated approach to tank waste remediation and established new milestones for construction and operation of a HLW vitrification plant.

1.2.4.5 Integrated SST and DST Waste Treatment

The changes since DOE's Record of Decision for the Hanford Defense Waste EIS resulted in DOE's proposal to integrate Hanford's tank waste remediation efforts. The integrated approach to tank waste remediation was adopted in the revised TPA. As a result, resolving tank waste safety issues, planning for SST waste retrieval, and developing pretreatment facilities have become major elements of the proposed TWRS program.

1.3 REGULATORY FRAMEWORK

The TPA identified an approach to remediation of waste stored in the 177 underground storage tanks at the Hanford Site. DOE, Ecology, and U.S. Environmental Protection Agency, in consultation with Tribes and stakeholders, considered a number of remediation options and proposed actions and milestones for activities that would result in the remediation of all tank waste by 2028. Federal and State laws require that before a proposed action that could significantly affect the environment is implemented, the impacts of the proposed action and its reasonable alternatives must be assessed in an EIS, the public must be given an opportunity to be involved in the decision-making process, and the decision-maker must consider the environmental impacts associated with the proposed action.
The TWRS EIS has been initiated by DOE to comply with NEPA, the Federal law requiring that environmental impacts be considered in Federal agency decision-making. Ecology has agreed to serve as a co-preparer of the EIS to ensure compliance with SEPA, the Washington State law requiring environmental impact analysis. NEPA and SEPA, along with the TPA are the main regulatory frameworks that will be addressed in TWRS EIS.

Other Federal and State regulatory requirements that will be addressed in the EIS are identified in Table 1.3 and discussed briefly in Appendix F.

1.3.1 National Environmental Policy Act

NEPA establishes the requirement for preparing an EIS for a major Federal action significantly affecting the quality of human health and the environment. The purpose of NEPA is to establish a national policy for the protection of the environment. The CEQ regulations implementing NEPA are codified in 40 CFR Parts 1500 through 1508. DOE's implementing procedures for NEPA are codified in 10 CFR Part 1021.

NEPA requires that if a Federal proposed action will have a significant effect on the quality of the human environment, the responsible Federal agency involved must prepare an EIS. The EIS must analyze the proposed action's reasonable alternatives on a basis that will accomplish the purpose and need of the proposed action. This analysis includes an evaluation of the extent by which each alternative achieves the purpose and need of the proposed action and a comparison of these impacts with impacts generated by a no action alternative. The following steps are required in the EIS process and will be addressed in this Implementation Plan:

- **Issuance of a Notice of Intent** - A Notice of Intent is a notice that an EIS will be prepared. It is used to inform the public, Tribes, and agencies of the opportunity to

provide comments during the EIS scoping period. The Notice of Intent for the TWRS EIS was published in the FR on January 28, 1994 (59 FR 4052). The TWRS EIS public notification is discussed in Section 3.1 and a copy of the Notice of Intent is provided as Appendix B.

- **Scoping** - Through the Notice of Intent, the public and agencies are invited to provide comments and suggestions on the scope, alternatives, and environmental analysis of the EIS. The scoping period for the TWRS EIS continued from January 28, 1994 until March 15, 1994 and involved public scoping meetings at five locations in the Northwest. DOE and Ecology accepted both written and oral comments during this 45-day period. Public scoping and the results of the scoping process are discussed in Section 3.0.
- **The EIS Implementation Plan** - An Implementation Plan provides guidance on preparing an EIS and records the results of the scoping process. Copies of this TWRS EIS Implementation Plan are available in the DOE Reading Rooms or Information Repositories, or by contacting DOE, as specified in Table 1.1.
- **Draft EIS** - A Draft EIS is prepared based on the results of the scoping process, CEQ regulations, and DOE NEPA regulations and guidance. The Draft EIS is then distributed for public, Tribal, and agency review. The proposed content of the TWRS EIS is shown in Appendix C. Notification of the TWRS Draft EIS availability will be given by publication of a Notice of Availability in the FR. The public will be advised of Draft EIS completion through media advertisements announcing its availability for review and public comment. Copies of the Draft EIS will be sent to concerned agencies, Tribes, and stakeholders concurrent with the publication of the Notice of Availability.
- **Public Comment Period** - The public review and comment period on the Draft EIS will be no less than 45 days. A public comment period begins when the Notice of Availability is published in the FR. During the comment period, DOE and Ecology will hold public hearings and solicit oral and written comments regarding the TWRS Draft EIS.
- **Final EIS** - Written and oral comments received during the public comment process on the Draft EIS will be evaluated, responses prepared, and a Final EIS will be issued. The Final EIS will be distributed to agencies, Tribes, and stakeholders after approval by DOE and Ecology, and issuance of a Notice of Availability.
- **Record of Decision** - A Record of Decision is DOE's public record of discussion that states what the decision is and other information required by 40 CFR Part 1505.2. No decision may be made during the 30 days following completion of the Final EIS. DOE and Ecology will review the Final EIS and then prepare a Record of Decision. The Record of Decision will be published and notification of the Record of Decision will be placed in the FR. No action will be taken until the decision has been made public.

- **Mitigation Action Plan** - Following the Record of Decision, a Mitigation Action Plan may be prepared if any mitigation commitments are identified in the Final EIS. The Mitigation Action Plan (if required) will address efforts to resolve or reduce adverse environmental impacts associated with the decisions documented in the Record of Decision and explain how mitigation will be planned and implemented. Copies of the Mitigation Action Plan will be made available in DOE Reading Rooms and Information Repositories. The Mitigation Action Plan (if required) will be issued following the publication of the Record of Decision.

1.3.2 Washington State Environmental Policy Act

SEPA is intended to ensure that environmental values are considered by State and local government officials when making decisions. SEPA is very similar to NEPA in its intent and purpose. SEPA requires agencies within Washington State proposing an action that might have a significant impact on the environment to evaluate reasonable alternatives and their potential environmental impacts before taking action.

The Washington State action in the remediation of tank waste would be the issuance of required Washington State environmental permits and authorizations. As with NEPA, when the projected environmental impacts might be considered significant, an EIS must be prepared. SEPA requires that agencies within Washington State evaluate an action's reasonable alternatives and their potential environmental impacts prior to the State approving the action. Because SEPA and NEPA are comparable in their purpose, intent, and procedures, Ecology and DOE have decided to prepare one EIS addressing the requirements of both SEPA and NEPA. Appendix A contains a copy of the Memorandum of Understanding signed by Ecology and DOE February 15, 1994.

Table 1.3 Relevant Federal and State Laws, Regulations, Orders, and Guidance

Federal	Statutes (Regulation)
Atomic Energy Act	42 United States Code (USC) 2011 et seq., as amended
American Indian Religious Freedom Act of 1978	42 USC 1996
Archaeological Resource Preservation Act	16 USC 470 et seq., as amended
Bald and Golden Eagle Protection Act	16 USC 668-668d, as amended
Clean Air Act	42 USC 7401 et seq., as amended (40 Code of Federal Regulations [CFR] Parts 50, 52, 60, 61 and 63)
Clean Water Act	33 USC 1251 et seq., as amended (40 CFR Part 122 et seq.)
Comprehensive Environmental Response, Compensation, and Liability Act of 1980	42 USC 9601 et seq., as amended (40 CFR Part 300)
Emergency Planning and Community Right-to-Know Act of 1986	42 USC 11001 et seq.
Endangered Species Act	16 USC 1531, as amended
Federal Facility Compliance Act	42 USC 6921 et seq.
Migratory Bird Treaty Act	16 USC 730 et seq., as amended
National Historic Preservation Act	16 USC 470, as amended
National Environmental Policy Act	42 USC 4321 et seq., as amended (40 CFR Parts 1500 through 1508 and 10 CFR Part 1021)
Native American Graves Protection and Repatriation Act of 1990	25 USC 3001
Noise Control Act of 1972	42 USC 4901 et seq.
Nuclear Waste Policy Act	42 USC 10101 et seq.
Occupational Safety and Health Act of 1970	29 USC 651 et seq.
Pollution Prevention Act of 1990	42 USC 13101 et seq.
Resource Conservation and Recovery Act of 1976	42 USC 6901 et seq., as amended (40 CFR Parts 260 through 280)
Safe Drinking Water Act	42 USC 300 (F) et seq. (40 CFR Parts 100 through 149)
Wild and Scenic Rivers Act	16 USC 1271 et seq. and 71:8301 et seq.
State of Washington	**Revised Code of Washington (RCW)**
Clean Air Act	Chapter 70.94 RCW
Environmental Policy Act	Chapter 43.21C RCW
Hazardous Waste Management Act	Chapter 70.105 RCW

Table 1.3 Relevant Federal and State Laws, Regulations, Orders, and Guidance (cont'd)

State of Washington (cont'd)	Revised Code of Washington
Water Resources Act	Chapter 90.03 RCW
Water Pollution Control Act	Chapter 90.48 RCW
Executive Orders	**Order**
Environmental Justice	Executive Order 12898
Floodplain Management	Executive Order 11988
Protection and Enhancement of Environmental Quality	Executive Order 11514
Protection of Wetlands	Executive Order 11990
Right-to-Know Laws and Pollution Prevention Requirements	Executive Order 12856
DOE Orders	**Order**
Environmental, Safety, and Health Program for DOE Operations	DOE 5480.1B
Environmental Protection, Safety, and Health Protection Information Reporting Requirements	DOE 5484.1
Radioactive Waste Management	DOE 5820.2A

1.3.3 Tri-Party Agreement

The TPA, signed by DOE, Ecology, and the U.S. Environmental Protection Agency on May 14, 1989, is an agreement to clean up radioactive and hazardous waste at the Hanford Site over a 30-year period. In January 1994, this agreement was modified to incorporate the TWRS program as currently envisioned. The TPA establishes the framework under which the Hanford Site waste management and cleanup must occur. It establishes an action plan for cleanup containing priority actions, issues, and milestones. The TPA contains specific requirements that DOE has committed to comply with regarding tank waste. These specific requirements are being assessed in the TWRS EIS and compared to other alternatives for tank waste remediation as well as the No Action alternative.

The major requirements of the TPA include the following milestones:

- **Tank Safety** - Resolution of tank safety issues will be completed by the end of 2001;
- **Tank Farm Upgrades** - Completion of upgrades at the tank farms, including improved tank ventilation systems, improved instrumentation, and improved electrical systems. Current TWRS plans have eliminated construction of new DSTs, and there is assumed to be adequate capacity in the existing DSTs to accommodate all of Hanford's HLW foreseeable need;
- **Tank Waste Characterization** - Characterization of all SSTs and DSTs by 1999;
- **SST Interim Stabilization** - Complete removal of the pumpable liquid from the SSTs by the end of the year 2000;
- **Pretreatment** - Start construction in 1998 of a facility to treat tank waste to prepare the LLW for final processing, to be operational by 2004;

- **LLW** - Discontinuation of Hanford's grout program. Initiate construction of a LLW vitrification facility in 1997, to be operational by 2005;
- **Tank Waste Retrieval** - Complete retrieval of waste from SSTs by 2018;
- **Hanford Waste Vitrification Plant** - Delay start of construction until 2002, to be operational by 2009;
- **Tank Waste Remediation Completion** - All LLW and HLW retrieval, pretreatment, and immobilization will be complete by 2028;
- **SST Tank Farm Closure** - Complete closure of all SSTs by 2024; and
- **DST Tank Waste** - Complete tank waste remediation by 2028.

The TPA sets milestones to achieve coordinated cleanup of the Hanford Site and provides and uses enforceable milestones to keep the program on schedule. The TPA establishes the applicability of the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to the Hanford Site.

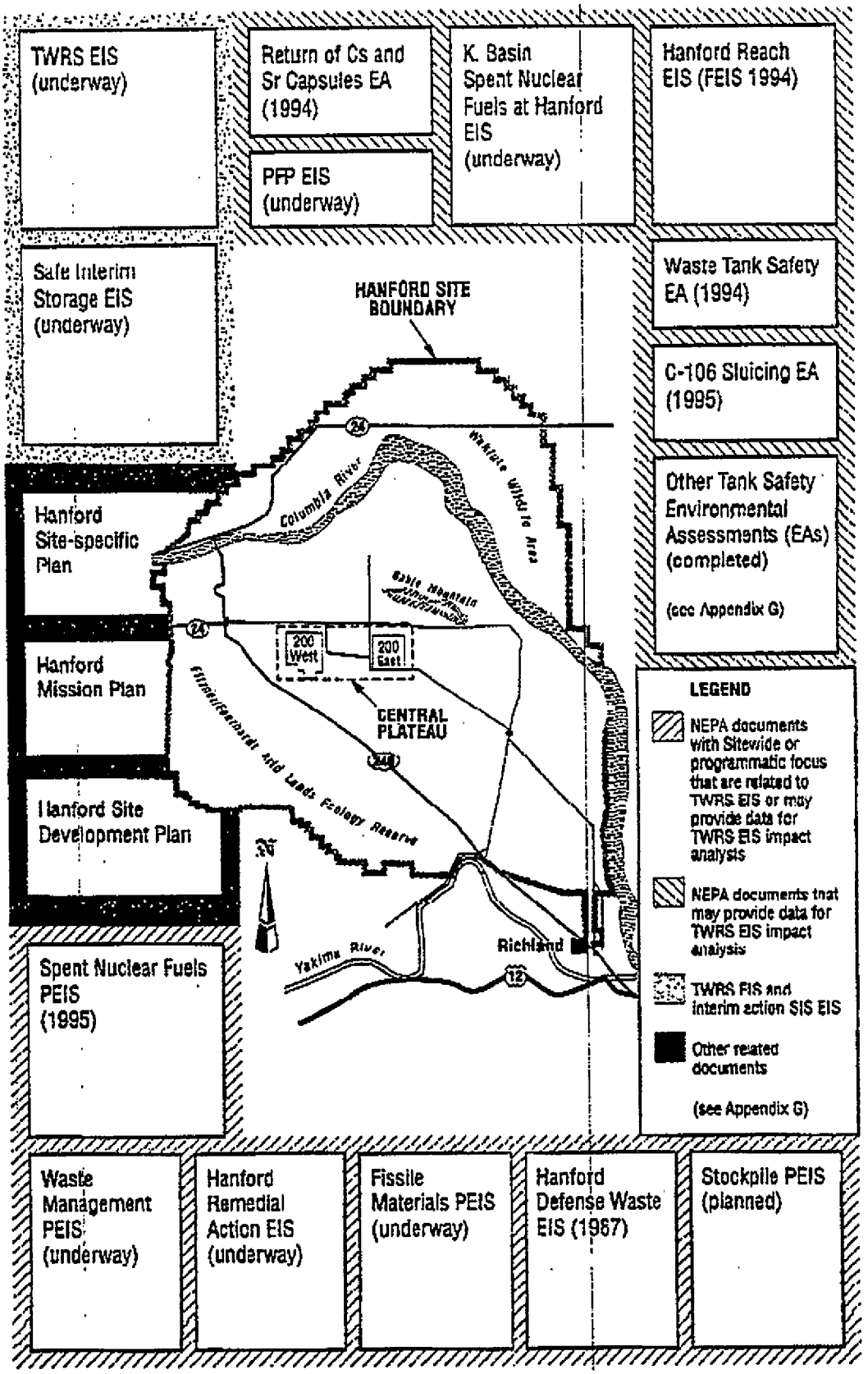
1.3.4 Other Relevant Federal and State Laws, Regulations, Orders, and Guidance

In addition to NEPA, SEPA, and the TPA, DOE and Ecology must ensure that any action implemented at the Hanford Site complies with all applicable Federal and Washington State laws and regulations. Other relevant Federal and State laws, regulations, orders, and guidance are listed in Table 1.3 and described in Appendix F.

1.4 OTHER DOE ACTIVITIES AND NATIONAL ENVIRONMENTAL POLICY ACT DOCUMENTS

DOE's planning activities relevant to waste management and disposal are in various stages of development. These include planning efforts to support the DOE Office of Environmental Restoration and Waste Management, the Hanford Site-Specific Plan, the Hanford Mission Plan, the Hanford Site Development Plan, and programmatic and other project-specific NEPA documents. The other DOE activities and NEPA documents that are relevant to the TWRS EIS proposed action are shown in Figure 1.3. Each of these activities and documents are described in Appendix G.

Figure 1.3 Relationship to Other Site and National Environmental Policy Act Documents



2.0 PURPOSE AND NEED FOR ACTION

DOE needs to manage and dispose of Hanford's tank and encapsulated wastes in ways that reduce existing and potential future risk to the public, Site workers, and the environment. The wastes are classified as radioactive, hazardous, and mixed wastes. The wastes are stored in 177 underground storage tanks and approximately 40 IMUSTs that were associated with tank farm operations, as well as 1,929 cesium and strontium capsules currently stored in water basins at the Waste Encapsulation and Storage Facility or expected to be returned to the Hanford Site. Additional waste resulting from current and planned cleanup operations at the Hanford Site may be added to the tanks and included in the proposed action.

The Hanford Site defense mission activities created a wide variety of wastes. The tank wastes, associated IMUST wastes, and encapsulated wastes contain by-products of nuclear reactor fuel processing and are therefore classified by Nuclear Regulatory Commission regulations as high-level radioactive wastes (10 CFR 41). The HLW presently stored in 28 DSTs, 149 SSTs, and in approximately 40 IMUSTs came from a variety of operations and has been processed and transferred between tanks causing the chemical and physical characteristics of the waste to vary greatly among and within individual tanks. The tank and MUST wastes also contain chemicals classified as hazardous waste under RCRA (40 CFR Parts 260 through 268 and 270 through 272) and as dangerous waste under the Washington Administrative Code (WAC) 173-303. The strontium and cesium wastes were extracted from SSTs and placed in 1,929 double-walled capsules. Planned future wastes to be stored in the tanks include dilute radioactive, hazardous, and mixed wastes.

In April 1988, in the Hanford Defense Waste Record of Decision, DOE decided to proceed with preparing DST wastes for final disposal (HDW Record of Decision 1988). However, several important changes have occurred since the 1988 Hanford Defense Waste Record of Decision (53 FR 12449). These include:

- The identification of important waste tank safety issues;
- The elimination of B Plant from consideration as a waste pretreatment facility;
- DOE, Ecology, and the U.S. Environmental Protection Agency signing the TPA;
- The termination of the Hanford Waste Vitrification Plant and grout facilities; and
- The decision to treat SST wastes in combination with DST wastes.

Actions have been and will continue to be taken to address immediate safety issues and to respond to potential releases to the environment. Characterization work is also ongoing to achieve a more detailed understanding of the tank waste contents. Currently, about half of the SSTs and six DSTs that contain wastes that have a low potential to release radioactive and hazardous waste directly to the environment and thereby pose potential risks to human health and the environment. Safety issues associated with waste include flammable gas generation, potential explosion of ferrocyanide-containing wastes, potentially flammable floating organic solvent layers, and the potential for nuclear criticality.

The immediate and near-term safety and environmental issues posed by these wastes are being addressed to minimize short-term potential risks to human health and the environment. Long-term actions are needed to safely manage and dispose of the waste in all underground tanks and associated IMUSTs and in cesium and strontium capsules to permanently reduce potential risks to human health and the environment. Long-term actions are also needed to ensure compliance with Federal and State laws regulating the management and disposal of radioactive and hazardous wastes. Federal and State laws and regulations require DOE to safely manage the tank wastes and encapsulated wastes and to dispose of HLMWs.

DOE actions taken to reduce risks must be consistent with Federal and Washington State laws, DOE policies, and must achieve the goals of the TPA, signed by DOE, Ecology, and the U.S. Environmental Protection Agency. The TPA establishes the applicability of RCRA and CERCLA to the Hanford Site. Actions taken to reduce risks must also be consistent with public policies and objectives.

The Atomic Energy Act requires the management, processing, and use of radioactive materials in a manner that protects workers, public health, and the environment. RCRA and the Washington State Hazardous Waste Management Act establish requirements for management of hazardous waste, including generation, treatment, storage, transportation, and disposal. The TPA establishes milestones for the management, retrieval, pretreatment, treatment, and storage and disposal of Hanford's tank wastes and management and disposal of cesium and strontium capsules.

Long-term solutions are also needed to fulfill DOE policies and objectives contained in the Defense Waste Management Plan (DOE 1983) prepared by DOE and submitted to the President and the United States Congress on June 16, 1983. The plan was developed by DOE to comply with DOE National Security and Military Applications of Nuclear Energy Authorization Act of 1982 (Public Law 97-90). It describes reference plans for the permanent disposal of HLW resulting from defense activities.

3.0 TWRS SCOPING PROCESS

The TWRS scoping process provided interested Federal and State agencies, Tribes, and stakeholders the opportunity to identify issues or concerns to be addressed in the EIS. CEQ regulations require an early and open process to determine the scope of an EIS. The purpose of the scoping process is to determine the scope and issues to be analyzed in the EIS. The scoping process also identifies and eliminates from detailed study the issues that are less significant, narrowing the discussion of such issues to a brief presentation of why they were not included for detailed analysis.

3.1 PUBLIC NOTIFICATION

On Friday, January 28, 1994, DOE published a Notice of Intent in the FR (Appendix B), announcing its intent to prepare the TWRS EIS, and the SIS of Hanford Tank Waste EIS. The Notice of Intent also announced DOE's intent to conduct a series of public scoping meetings on the proposed actions, in accordance with CEQ regulations, and DOE NEPA Implementing Procedures (10 CFR Part 1021). On that same date, Ecology made a Determination of Significance under SEPA and published a request for comments on the scope of the EIS in the SEPA Register.

The purpose of the scoping meetings was to inform the public about the history of the TWRS program, the intent of NEPA and SEPA, the proposed action, and the nature and content of NEPA documents to be prepared. These meetings also allowed the public an opportunity to identify, for the record, significant issues that should be considered by DOE and Ecology in preparation of the TWRS EIS and SIS EIS.

Advertisements were placed in local newspapers to announce the public scoping meetings. The newspapers and the dates the advertisements appeared are listed in Table 3.1.

3.2 THE SCOPING PROCESS

During a 45-day comment period ending March 15, 1994, DOE and Ecology invited all interested parties to submit comments or suggestions concerning the scope of the issues to be addressed, alternatives to be analyzed, and the environmental impacts to be assessed within each of the EISs. The public was also invited to attend scoping meetings at which both oral and written comments were accepted on the proposed EISs. The public scoping meetings were held on the dates and locations listed in Table 3.2.

Each scoping meeting began with an introduction of DOE and Ecology officials, followed by short presentations by those officials. Topics of these presentations included NEPA and SEPA EIS processes, the Hanford TWRS program, the proposed interim action, and the proposed TWRS action. Individuals and organization spokespersons then had an opportunity to present comments to DOE and Ecology. Staff representatives were available to respond to informal questions and to discuss issues of concern with the commentors. This agenda was repeated twice a day at each location, in afternoon and evening sessions.

Table 3.1 Newspaper Advertisements Announcing Scoping Meetings

Newspapers	Advertisement Dates (all dates in 1994)
Tri-City Herald	January 30 & February 6, 13
Spokesman Review	February 2, 13, 20, 24
Hood River News	February 2, 3, 9, 10
Yakima Herald Republic	February 2, 6, 13
East Oregonian	February 2, 12, 15
Oregonian	February 2, 13, 17
Walla Walla Union Bulletin	February 2, 6, 13
Seattle Times/PI	February 2, 6, 20, 22

Table 3.2 Scoping Meetings for TWRS and SIS EISs

Meeting Location	Meeting Date	Meeting Site
Richland, Washington	February 14, 1994	Hanford House - Red Lion Richland, WA 99352
Hood River, Oregon	February 16, 1994	The Hood River Inn/Best Western Hood River, OR 97031
Portland, Oregon	February 17, 1994	Bonneville Power Administration Auditorium Portland, OR 97204
Seattle, Washington	February 22, 1994	The Mountaineer's Seattle, WA 98105
Spokane, Washington	February 24, 1994	Spokane Convention Center Spokane, WA 99201

Twenty-three individuals, representing themselves or an organization, presented oral comments at the five public scoping meetings. A verbatim transcript was made by a court reporter of all comments from each meeting. Written comments were also accepted at the meetings and throughout the comment period. Thirty individuals submitted written comments representing their own concerns or those of an organization. Copies of all transcripts and comment letters are available in DOE Reading Rooms and Information Repositories listed in Table 1.1.

3.3 PRELIMINARY IDENTIFICATION OF SCOPE, ALTERNATIVES, AND ISSUES

Summarized in the following sections is the scope of the proposed action, alternatives, and issues to be analyzed in the TWRS EIS as presented in the Notice of Intent and at the scoping meetings.

3.3.1 Scope and Alternatives

The initial scope of the TWRS EIS was provided in the Notice of Intent and at each public scoping meeting. The scope called for consideration of the environmental consequences associated with:

- Continued tank waste and encapsulated waste management;
- Retrieval of both SST and DST waste;
- Processing the waste into HLW and LLW streams;
- Immobilizing the HLW stream and storing the treated material until a HLW geologic repository is available; and
- Immobilizing the LLW stream and disposing of it or putting it into retrievable storage onsite.

The pretreatment to be used on the tank waste was envisioned as being bounded by minimal pretreatment and extensive pretreatment activities that would result in markedly different quantities of material being sent to a geologic repository. In addition, the impacts of implementing the No Action alternative would be included in the scope of the EIS. Identified below are the various alternatives presented to the public during the scoping process. The comments, and DOE and Ecology's responses to comments, are summarized in Section 3.4 and provided in detail in Appendix D. The revised scope and alternatives to be addressed in the TWRS EIS, which reflect responses to commentor input, are presented in Section 4.0 of this Implementation Plan.

3.3.1.1 Tri-Party Agreement Alternative

The TPA, as amended, covers subjects outside the extent of the TWRS program. However, the elements of the TPA that are within the scope of the TWRS program were identified in the Notice of Intent. The TPA provides for a range of options to achieve its goals. For the purposes of analysis in the EIS, an integrated alternative was developed from among the options identified in the TPA.
The TPA alternative, as presented during the scoping process, consisted of the following:

- Stabilizing SST waste by removing and storing the pumpable liquids in DSTs, reducing the potential for leaks to the surrounding soil;
- Retrieving the waste from SSTs and DSTs with priority on the SSTs. The retrieval criterion would be removal of 99 percent of the waste from all SSTs on a tank-by-tank basis;
- Constructing and operating a waste pretreatment facility to treat the tank waste and to prepare the LLW stream for final processing. The HLW stream would be stored pending final processing. Separate complexes would be constructed to house enhanced sludge washing and cesium and strontium ion exchange processes. An evaporator to remove liquids from the waste would be included in the LLW pretreatment complex.

These complexes could be stand-alone facilities, a set of distributed facilities, or part of a central processing complex;

- Constructing and operating a LLW vitrification plant of appropriate capacity. Bounding analysis would identify maximum and minimal capacity and other facility characteristics pending finalization of data. To resolve safety issues, DOE would maintain the capability to restart the grout facility if its operation would be necessary before new DSTs would be available to provide tank space;
- Storing and disposing of the vitrified LLW in a retrievable form onsite at Hanford;
- Constructing and operating a HLW vitrification plant of appropriate capacity. Bounding analysis, an examination of maximum and minimal requirements, would be used if definitive designs were not available;
- Constructing and operating a storage facility for vitrified HLW until a HLW repository for permanent disposal would be available; and
- Over-packing and storing, or dissolving and blending with the HLW vitrification waste stream, the existing cesium and strontium capsules.

The TPA Alternative's components applicable to the proposed TWRS EIS actions will be evaluated in the EIS under the Extensive Retrieval (Ex Situ Vitrification) alternative.

3.3.1.2 Additional Alternatives

The Notice of Intent specified that additional alternatives were to be constructed from the range of options described below to adequately evaluate potential environmental impacts. Following are summaries of the options presented during the scoping process.

Options for Waste Retrieval - Waste would be retrieved by pumping, hydraulic sluicing, hydraulic mining, and mechanical-removal or pneumatic-recovery systems. Hydraulic sluicing would inject liquid into the tank to dislodge or dissolve the waste. Pumps would transfer the liquid and slurry out of the tank. Mechanical or pneumatic systems would be in contact with the waste, condition the waste and transfer the waste to the pretreatment process.

Options for Waste Pretreatment - Pretreatment would be performed to separate the waste into HLW and LLW streams. One option would be to perform no pretreatment. Another option would be to minimize the volume of HLW going to a geologic repository by pretreating the waste to separate it into HLW and LLW streams. Two bounding alternatives for pretreating tank wastes include Minimal pretreatment and Extensive pretreatment. These corresponded to the reasonable limits of waste pretreatment technologies (such as evaporation, chemical digestion, solids and liquids separation, and nuclide separation) to concentrate the radionuclides into a smaller volume.

The pretreatment bounds would influence the relative volumes and concentrations of HLW and LLW to be immobilized, stored, and disposed of properly. The pretreated waste would be transferred to the waste immobilization process. Minimal pretreatment would use sludge washing to separate the waste

into a smaller stream of HLW (containing the majority of radionuclide activity), and a larger LLW stream. The LLW could be subjected to an evaporation step to reduce the volume resulting from the sludge washing process. Extensive pretreatment would use advanced extraction methods to provide the maximum level of radionuclide partitioning. Hazardous nitrates, metals, and other selected chemicals would be removed from the LLW stream. The volume of the HLW stream would be minimized.

Options for Waste Immobilization - The immobilization process would treat the waste coming from the pretreatment process. The immobilized waste would be transferred to a storage or disposal facility. HLW immobilization options included vitrification, ceramic forms, and calcination. After immobilization, the HLW stream would comply with criteria for geologic repository waste acceptance and transportation.

LLW immobilization options included vitrification or cement polymer-based grout. The encapsulated cesium and strontium would be prepared to meet the criteria for geologic repository waste acceptance and transportation. The first option would be overpacking the capsules. If the repository waste acceptance criteria could not be achieved solely by overpacking, the capsules would be stabilized in the same manner as the HLW stream (e.g., vitrification, ceramic, or calcination).

Options for Waste Storage and Disposal - HLW disposal options included placement of the stabilized waste in an offsite geologic repository or in interim onsite storage pending availability of an offsite geologic repository. LLW disposal options depend on the stabilized waste form and included onsite landfill burial in containers, burial in onsite vaults, burial onsite in steel culverts with liners and leachate collection, return of immobilized wastes to tanks, and soil-melt slurry injection to a landfill. Some of these options would allow for future retrieval of the waste.

3.3.1.3 No Action Alternative

The No Action alternative for TWRS, as defined in the Notice of Intent and at scoping meetings, would be continued safe management of tank wastes and encapsulated cesium and strontium. Specifically, this would include continued maintenance, monitoring, and safety upgrades. No action also would include maintaining the LLW grouting facility in a standby condition in case its operation would be necessary before new DSTs were available to provide tank space. The No Disposal Action alternative was analyzed in the Hanford Defense Waste EIS, and DOE would update the Hanford Defense Waste EIS analyses in the TWRS EIS. CEQ's regulations require examination of a no action alternative.

3.3.2 Environmental Issues

Potential environmental issues were identified prior to the scoping process and listed in the Notice of Intent. These issues included the following:

- Exposure of the public and onsite workers to releases of radiological and nonradiological materials during normal operations and from reasonably postulated accidents;
- Pollution prevention and waste minimization;

- Air and water quality and other environmental consequences from normal operations and potential accidents;
- Cumulative effects of operations at the Hanford Site, including relevant impacts from other past, present, and reasonably foreseeable activities at the Site;
- Endangered species, floodplain and wetlands, archaeological and historical sites;
- Future decommissioning decisions;
- Normal transportation and postulated transportation accidents;
- Socioeconomic impacts on surrounding communities;
- Unavoidable adverse environmental effects;
- Short-term uses of the environment versus long-term productivity; and
- Irretrievable and irreversible commitment of resources.

3.3.3 Related Actions

The Notice of Intent for the TWRS EIS indicated that DOE may need to initiate interim actions while the TWRS EIS is being prepared. Interim actions would have to be independently justified and would have to be actions on which decisions were needed prior to the scheduled completion of the TWRS EIS. An interim action would not prejudice the ultimate decision to be made on the basis of the TWRS EIS because the action would be needed regardless of which alternatives are selected in the Record of Decision for the TWRS EIS. The SIS EIS is an interim action EIS initiated to resolve tank waste safety issues related to hydrogen generation in the Watchlist tanks. Other interim actions may include system and infrastructure upgrades, stabilization activities, and technology development and demonstration activities. These interim activities, if initiated, would also require preparation of independent NEPA reviews while the TWRS EIS is in preparation.

3.4 PUBLIC SCOPING PROCESS RESULTS

The EIS scoping process provided an opportunity for stakeholders, Tribes, and Federal, State, and local agencies to address both the TWRS EIS and the SIS EIS. Scoping resulted in comments that were relevant only to the TWRS EIS, relevant only to the SIS EIS, or were applicable to both of the EISs.

This Implementation Plan summarizes and responds to those comments relevant only to the TWRS EIS as well as those comments applicable to both EISs. Those comments relevant to the SIS EIS and both EISs are compiled and responded to in the Implementation Plan for the SIS EIS.

DOE and Ecology, co-preparers of the TWRS EIS, considered both oral and written comments equally in the preparation of the TWRS EIS scope, alternatives, and issues to be addressed. Specific comments have been grouped and summarized from written comments submitted and from transcripts of oral comments received during public scoping meetings.

Copies of the scoping meeting transcripts and written comments submitted during the scoping period are located in the DOE Reading Rooms and Information Repositories listed in Table 1.1.

These documents are also available by calling the Hanford Cleanup Toll-Free Line at 1-800-321-2008 or writing to either:

Carolyn Haass
DOE TWRS EIS NEPA Document Manager
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Richland, Washington 99352

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Olympia, Washington 98504-7600

3.4.1 Issues Identified During the Public Scoping Process

This section identifies those issues raised during the public scoping process and the relationship of these issues to the content and analysis to be performed in the TWRS EIS. Each of the following sections will indicate which issues will or will not be included for evaluation in the TWRS EIS. A complete summary of the scoping comments and DOE's responses to those comments are provided in Appendix D.

All the topics originally identified in the Notice of Intent will be evaluated in the TWRS EIS. The public scoping process resulted in the identification of several issues included in the Notice of Intent as well as several other issues not included in the Notice of Intent, which will be addressed in the TWRS EIS.

3.4.1.1 EIS Scope and Content

The scope and content of the EIS was the subject of public comments. From these comments, the following issues were identified. Each issue is preceded by a number (e.g., "[1]"). This number is used to help the reader follow the discussion of how issues identified by commentors are to be addressed in the TWRS EIS. Each number assigned to an issue corresponds to that same number located either in the **Issues to be Addressed in the TWRS EIS** or in **Issues Not to be Addressed in the TWRS EIS** sections of the specific topics being discussed.

Issues Identified

Issue No.

(1) The scope of the EIS should be limited to only addressing supernatants because characterization will not be completed in time to be incorporated in the TWRS EIS.

(2) The scope of the EIS should include evaluation of long-term storage of HLW product (e.g., glass) because the geologic repository is speculative and in the far future.

(3) Interim or long-term storage of tank waste with other waste requiring shielding at Hanford should be considered in the EIS.

(4) Waste remediation and storage should be considered by a Sitewide EIS or at least within the context of the remediation and storage of other wastes.

(5) Two separate EISs should be prepared, the first dealing with supernatant and saltcake and facilities for LLW and the second to be started at a later time to address sludge, HLW facilities, and tank closure.

(6) Waste management and safety issue resolution must be addressed in a Sitewide strategy to integrate all aspects of waste management decontamination and decommissioning (D&D) activities.

(7) The EIS should address creation of an effective land-use plan to address onsite waste handling and disposal while addressing the need for emergency response capabilities and evacuation routes.

(8) The EIS should assess improvements to the tank farm infrastructure.

(9) The EIS should compare short-term releases from leakage of sluicing water involved with retrieval of tank waste to long-term releases from in-place disposal.

(10) The EIS should not duplicate analysis contained in the Technical Options Report.

(11) Decisions other than those reached in the TPA were opposed.

(12) Setting a planning goal to minimize the number of new tanks needed was supported.

EIS Scope and Content Issues to be Addressed in the TWRS EIS:

Issue No.

(1) The TWRS EIS will address all the forms of tank waste (e.g., liquids, sludges, salt cakes). This EIS will evaluate the consequences of implementing each alternative using available characterization data. DOE and Ecology propose to proceed on the basis of CEQ regulatory guidance for alternative impact evaluation methods including "theoretical approaches" (40 CFR 1502.22).

(2) The TWRS EIS will address the interim storage of HLW at the Hanford Site as well as the impacts associated with HLW transportation to a national geologic repository for disposal. This analysis will include an evaluation of an extended period of storage to reasonably address the onsite storage requirements prior to the availability of a national geologic repository to accept HLW.

(3) The TWRS EIS will address the cumulative impacts of TWRS EIS alternatives, as well as other DOE remediation efforts at Hanford including storage of waste requiring shielding.

(4) Alternative strategies for waste storage will be included in the TWRS EIS, as will an evaluation of the cumulative impacts of each of the TWRS EIS alternatives in relation to other Hanford Site waste storage activities. The analysis for waste storage in the TWRS EIS could provide an informational basis for future consideration of Sitewide waste remediation and storage; however, the creation of a Sitewide waste remediation and storage plan is beyond the scope of the TWRS EIS.

(6) The EIS will address the cumulative impacts for the proposed action on the Site with respect to other Hanford Site waste management activities. The alternatives proposed for analysis in the TWRS EIS are being considered as part of the Hanford Site strategy for tank waste remediation. The analysis in the TWRS EIS could provide an informational basis for future consideration of a Sitewide strategy to integrate all waste management and D&D activities. The TWRS EIS will evaluate the cumulative impacts of D&D activities related to existing or new TWRS facilities. However, the creation of a Sitewide strategy for waste management and D&D facilities is beyond the scope of the TWRS EIS.

(8) Improvements to the tank farm infrastructure required to implement the alternatives will be evaluated in the EIS. Infrastructure improvements implemented as part of routine operations and safe management will be addressed in the No Action alternative. Other infrastructure improvements to the tank farm facilities have been and will continue to be evaluated in separate NEPA documents prior to the completion of the TWRS EIS.

(9) An evaluation of the associated environmental impacts and a comparison of those impacts relevant to the Minimal Retrieval (In Situ Vitrification) with the No Action and the Extensive Retrieval (Ex Situ Vitrification) and Selective Retrieval alternatives also will be completed in the TWRS EIS.

(10) The Technical Options Report is a source of information that will be used in the development of the TWRS EIS along with other existing data.

(11) The EIS will evaluate alternatives developed from options contained in the TPA. The final decision on which alternative to implement will be made in the Record of Decision.

(12) The EIS will address the minimum number of tanks needed to implement each alternative, how that number was determined, and the associated environmental impacts.

EIS Scope and Content Issues Not to be Addressed in the TWRS EIS:

Issue No.

(5) The TWRS EIS will not evaluate the need for separate EISs. Through the TPA signed by DOE, U.S. Environmental Protection Agency, and Ecology, the analysis for remediation of Hanford's tank waste should be comprehensive and include all waste types within the tanks and the subsequent options for waste management, retrieval, treatment, storage, and disposal. The TWRS EIS analysis will evaluate tank farm closure in relation to other TWRS activities for cumulative impacts only.

(7) The TWRS EIS will not address the creation of a Sitewide land-use plan to address onsite waste handling and disposal at the Hanford Site. The TWRS EIS will provide an assessment of land-use restrictions and commitments of resources for each of the alternatives analyzed in the EIS. Emergency response capabilities and evacuation routes have already been determined and identified for the Hanford Site. However, the TWRS EIS will provide analysis for emergency response requirements based on the risks associated with the alternatives presented in the EIS.

3.4.1.2 Alternatives

The alternatives to be addressed in the EIS were the subject of public comments. From these comments, the following issues were identified.

Issues Identified

Issue No.

(1) Waste in the SSTs and the DSTs should be vitrified and disposed of in-tank or by liquid removal, stabilization with grout, and gravel backfilling.

(2) The waste should not be treated with in-tank vitrification until emission controls can be improved.

(3) An alternative should be evaluated that would involve grouting the retired canyon facilities with hot grout.

(4) RCRA disposal of tank waste as part of an in-tank stabilization and disposal alternative should be examined.

(5) The EIS should evaluate Hanford sites for storage of low-level vitrified wastes.

(6) The EIS should consider options that expedite interim storage of wastes at Hanford or another monitored retrievable storage facility.

(7) The EIS should evaluate using mobile railcars for transportation and interim storage of tank waste, including existing sidings plus new sidings with berms, and liners or concrete aprons under cars.

Commentors also suggested the following disposal alternatives.

Issue No.

(8) Launch tank waste to the sun or out of the solar system.

(9) Insert the waste into the sea floor at points of subduction.

(10) Store the waste in stainless-steel canisters several thousands of feet down in a stable portion of the continent's thick crust (approximately 3,000 meters [10,000 feet]) and then backfill the space between the canisters and the surface with inert material.

(11) Remove tank waste, then vitrify and store the resulting glass logs in the grout vaults.

(12) Increase funding of research into long-term solutions for waste disposal.

(13) Ensure capability to recover and provide for further remediation of wastes.

(14) One commentor questioned what the final disposal site for HLW would be if the National Repository is not built in Nevada.

(15) One commentor recommended evaluation of large-cask disposal of minimized wastes as a basis for comparison with disposal of unseparated vitrified waste at the offsite HLW repository.

EIS Alternative Issues to be Addressed in the TWRS EIS:

Issue No.

(1, 2) Analysis of the in-tank disposal alternative will be included in the TWRS EIS including in-tank vitrification and an option to fill and cap the tanks.

(4) Applicable regulations, including RCRA, will be addressed for each of the alternatives. The EIS will address compliance issues to the extent that wastes, technologies, or storage and disposal options are regulated by Federal or State agencies.

(5) The locations of all TWRS facilities, including storage and disposal, will be discussed in the EIS.

(6, 13) Some of the LLW disposal options analyzed in the TWRS EIS would evaluate the potential for future retrieval of Hanford's tank waste. In this context, the disposal alternatives evaluated for Hanford's LLW will be addressed as retrievable disposal options.

(7) Cross-site transportation and storage of tank waste will be included as part of the Extensive Retrieval alternative evaluation in the TWRS EIS. In addition to an evaluation of the Extensive Retrieval alternatives, an alternative that will address in-tank disposal and out-of-tank storage

and disposal of some tank waste will be addressed in the EIS. For each of the TWRS EIS alternatives that includes out-of-tank treatment, storage, and disposal of tank waste, various options (including the use of railcars) for interim storage and cross-site transfer of the waste will be evaluated in the TWRS EIS.

(11) Removal, stabilization, and storage of tank waste will be included as part of the Extensive Retrieval alternative evaluation in the TWRS EIS. In addition to an evaluation of the Extensive Retrieval alternative, a Selective Retrieval alternative that will address in-tank disposal and out-of-tank disposal of some tank waste will be addressed in the EIS. For each of the TWRS EIS alternatives that includes out-of-tank treatment, storage, and disposal of tank waste, various options (including the use of grout vaults) for interim storage of the waste will be evaluated in the TWRS EIS.

(12) Research and development of technologies for waste disposal will be considered in the EIS in the context of the alternative analysis to the extent that specific technologies may require varying levels of research and development to be fully implementable.

(15) The Extensive Retrieval No Separations subalternative will be evaluated and provide a basis for a comparison with other options for offsite disposal of tank waste.

EIS Alternative Issues Not to be Addressed in the TWRS EIS:

Issue No.

(3) The TWRS EIS will not provide an evaluation of an option that would involve using the retired canyon facilities for storage of grouted tank waste (hot grout).

(8, 9, 10) Disposal of waste in outerspace, seabed subduction, and deep hole injection will not be addressed in the TWRS EIS. The identification and selection of a HLW repository is not within the scope of the TWRS EIS. However, the risks associated with the transportation of HLW to a proposed national HLW repository will be analyzed in the TWRS EIS.

(14) The determination of the location of a geologic repository is not within the scope of the TWRS EIS. However, the TWRS EIS will evaluate risks associated with transportation of HLW to a proposed national HLW repository assumed to be approximately 1,400 km (900 miles) from the Hanford Site.

3.4.1.3 Closure and Land-Use Restrictions

Several commentors identified consideration of closure and land-use restrictions as an issue of concern. Commentors called for the EISs to address closure as a:

Issues Identified

Issue No.

(1) RCRA treatment, storage, and/or disposal (TSD) facility (e.g., "clean closure");

(2) Under RCRA as a landfill; and

(3) Under RCRA Subpart X for in-tank disposal.

Commentors also identified the following concerns.

Issue No.

(4) Other commentors suggested an evaluation of closure in terms of implementation of alternatives that would result in attainment of a criteria that would allow closure to be meaningfully evaluated.

(5) Alternatives should be discussed in terms of restoring the tank farms to a condition that will allow unrestricted land use at closure.

(6) One commentor urged that options inconsistent with unrestricted usage at closure should be identified early in NEPA process so natural resource trustees can identify necessary restoration actions and costs.

(7) The EIS should consider the amount of land that would be included as a sacrifice zone.

(8) One commentor supported consideration of a comprehensive land-use plan that would minimize the need for additional consumption of land for waste management activities.

Tank Farm Closure and Land-Use Restriction Issues to be Addressed in the TWRS EIS: Closure will be evaluated in the EIS to allow for an analysis of the differences among alternatives and as an element in the cumulative impacts discussion.

Issue No.

(6) Any TWRS EIS alternative found to be inconsistent with unrestricted land usage at closure will be identified. Natural resource trustees will be consulted with throughout the NEPA process regarding impacts associated with TWRS EIS alternatives.

(7) The TWRS EIS will discuss the potential area requirements for onsite storage for disposal of Hanford's tank waste as part of the alternative analysis.

(8) The EIS will analyze the land-use requirements of each of the alternatives. The analysis will allow comparison between the alternatives as well as a comparison to Site land-use plans.

Tank Farm Closure and Land-Use Restriction Issues Not to be Addressed in the TWRS EIS:

Issue No.

(1, 2, 3, 4, 5) Closure regulations require detailed analysis of contaminants, environmental impacts, specific closure plans, and technologies. Closure also involves programmatic issues and project-specific decisions. Sufficient information will not be available at the level required to support programmatic or project-specific decisions regarding closure; therefore, final tank farm closure is not within the scope of this EIS.

3.4.1.4 Vitrification

Vitrification was the subject of public comments. From these comments, the following issues were identified.

Issues Identified

Issue No.

(1) In-tank or out-of-tank vitrification of HLW and LLW was supported and opposed.

(2) Encasement of vitrified material in non-contaminated or already contaminated lead, cement, or stainless-steel containers suitable for long-term storage or disposal was supported.
(3) Various vitrification options (e.g., 50-ton per-day furnace using sodium nitrate) was supported.
(4) Various feed materials and vitrified waste forms (e.g., marbles, ingots, clinkers) were suggested.
(5) Filling the interstitial space in casks around the marbles or clinkers with lead or graphite available onsite was recommended.
(6) Considering the LLW vitrification facility as an interim action to expedite remediation was supported.
(7) The EIS should compare costs associated with large-cask repository disposal of minimized wastes without generation of a LLW stream with the vitrification waste streams.

Vitrification Issues to be Addressed in the TWRS EIS:

Issue No.

(1, 2, 3, 4, 5, 7) The EIS will address vitrification of tank waste as an immobilization treatment technology alternative in the alternative analysis of the Minimal Retrieval (In Situ Vitrification), Selective Retrieval (in-tank and out-of-tank) and the Extensive Retrieval (Ex Situ Vitrification) alternatives. Shielding and encasement options, vitrification technology options, feed material options, waste form options, and fill material options will be addressed in the EIS. The EIS will also address costs and environmental impacts with storage of minimized unvitrified waste with the various options for waste separation and vitrification.

Vitrification Issues Not to be Addressed in the TWRS EIS:

Issue No.

(6) Implementing LLW vitrification as an interim action to the TWRS EIS is not at present independently supportable as required by CEQ regulations. If, however, during the preparation of the TWRS EIS, independent justification for a separate or an interim action is identified, one would be prepared.

3.4.1.5 Grout

Commentors expressed both opposition to and support of grout as a medium for disposal of waste. The following issues were identified.

Issues Identified

Issue No.

(1) Concern about the stability of grout was expressed.
(2) The past elimination of grout as a waste form should preclude its evaluation in the TWRS EIS.
(3) Consideration of non-grout treatment options was supported.
(4) Concern about the use of the grout facility if it is not used by TWRS for LLW was expressed.

Grout Issues to be Addressed in the TWRS EIS:

Issue No.

(1, 2, 3) Grout is considered to be a reasonable alternative waste form for LLW disposal and for use as an in-tank stabilization option. This technology, therefore, is being included in the TWRS EIS.

Grout Issues Not to be Addressed in the TWRS EIS:

Issue No.

(4) The TWRS EIS will not address the status of the grout facility if it is not identified as a facility required to implement TWRS alternatives. The EIS will only include an evaluation of use of the vaults for disposal of stabilized LLW.

3.4.1.6 Waste Characterization

Concerns expressed by commentors include the following.

Issues Identified

Issue No.

(1) Characterization methods and laboratories are inadequate to properly perform the needed characterization.

(2) Much of the characterization data obtained thus far is inadequate and therefore, it would be more cost beneficial for DOE to examine what needs to be done to improve characterization before proceeding.

(3) It is a waste of money to combine SST and DST waste since little is known about the waste characteristics of SSTs, while DST waste is well defined.

Waste Characterization Issues to be Addressed in the TWRS EIS:

Issue No.

(2, 3) The TWRS EIS will address the quality and sufficiency of existing waste characterization data as it relates to analysis of the alternatives. The EIS will address combining SST waste and DST waste under several alternatives that will be examined in the EIS.

Waste Characterization Issues Not to be Addressed in the TWRS EIS:

Issue No.

(1) Under the TPA, DOE intends to conduct an integrated program to treat, store, and dispose of SST and DST waste. Additional characterization of SST and DST waste is being performed in support of that program. Alternatives for waste characterization are outside of the scope of this EIS.

3.4.1.7 Waste Storage and Retrieval

Waste retrieval issues to be addressed in the EIS were the subject of public comments. From these comments, the following issues were identified.

Issues Identified

Issue No.

(1) Options for pumping liquid waste from SSTs to avoid further leaks should be considered.

(2) Use of freeze barrier isolation of tank waste during cleanout operations or in-tank processing or treatment to protect the vadose zone and the saturated zone was suggested.

(3) The EIS should identify how waste will be removed from the SSTs and transferred to the DSTs.

(4) An analysis of whether tanks can withstand sluicing or other means of retrieval should be included in the EIS.

(5) The EIS should evaluate environmentally benign barriers and containment technologies.

(6) One commentor supported accelerated development of onsite storage and disposal facilities.

(7) Another commentor suggested a minimal level of retrieval of tank sludge and solids should be evaluated.

Waste Retrieval Issues to be Addressed in the TWRS EIS:

Issue No.

(1, 2) The EIS will address options for waste retrieval from the tanks and the transfer of wastes from the tanks to pretreatment and treatment facilities.

(3) Retrieval options that will be addressed include minimization of leaks from tanks during retrieval and use of various barriers, such as freeze barrier isolation.

(4) Waste retrieval options will include an analysis of the ability of the tanks to withstand retrieval of waste.

(5) Environmentally benign barriers and containment technologies will be addressed in the Minimal Retrieval and Selective Retrieval alternatives.

(6) The EIS will assess various onsite storage and disposal options, as well as offsite disposal to support decision-making regarding storage and disposal of tank waste.

(7) The EIS will evaluate varying ranges of tank sludges and solids retrieval in the Minimal Retrieval, Selective Retrieval, and Extensive Retrieval alternatives.

Waste Retrieval Issues Not to be Addressed in the TWRS EIS: None identified.

3.4.1.8 Waste Treatment

Waste treatment issues to be addressed in the EIS were the subject of public comments. From these comments, the following issues were identified.

Issues Identified

Issue No.

(1) Putting the waste in a breeder reactor or Washington Public Power Supply System reactor and burning the waste while producing electricity was supported.

(2) Use of solvent extraction to remove transuranics from the waste stream was recommended.

(3) Concern was expressed with how the EIS would address the safe disposition of ferrocyanide compounds and tritium.

(4) Ion exchange as a method to concentrate radionuclides and reduce waste volume was supported.
(5) Using a building that is totally filtered to burn the waste to ash thereby producing a smaller volume of waste for disposal was suggested.
(6) Options for processing tank waste into two waste streams (HLMW and LLW) was supported.

Waste Treatment Issues to be Addressed in the TWRS EIS:

Issue No.

(2, 3, 4, 6) The EIS will include analysis on the use of extraction methods to remove transuranics from the waste stream, the safe disposition of ferrocyanide compounds and tritium, ion exchange as a method to concentrate radionuclides and reduce waste volume, and options for processing of tank waste into two waste streams (HLMW and LLW).
(5) The suggestion of using a building that is totally filtered and burns the waste to ash, thereby making a smaller volume of waste for disposal, will be addressed in the context of the examination of vitrification, which parallels this suggestion.

Waste Treatment Issues Not to be Addressed in the TWRS EIS:

Issue No.

(1) Hanford tank waste is not suitable for use as an energy source in a nuclear reactor. The TWRS EIS will provide an analysis that will support review of the environmental impacts associated with onsite storage and retrievable disposal options for Hanford's tank waste should future technologies be developed for the utilization of this waste as an energy source.

3.4.1.9 Resource Recovery and Waste Minimization

Waste resource recovery issues to be addressed in the EIS were the subject of public comments. From these comments, the following issues were identified.

Issues Identified

Issue No.

(1) An investigation of resource value in the waste was recommended.
(2) There should be a capability to recover and further remediate waste.
(3) Existing or new waste streams to the tanks should be minimized.
(4) There should be an analysis of ways to minimize tank waste requiring remediation.
(5) Waste volume reduction options including the use of sodium nitrate, sodium nitrite purification, and sugar denitrification of the purified sodium salts to reduce waste volume was supported.
(6) Use of an existing (242-A) or new evaporator to minimize liquid waste was supported.

Resource Recovery and Waste Minimization Issues to be Addressed in the TWRS EIS:

Issue No.

(1) The recovery of valuable energy and other materials from the waste will be addressed in the TWRS EIS, under the Extensive Retrieval alternative.

(2) The capability to recover and further remediate waste will be discussed in the retrievable disposal options of the various waste disposal alternatives.

(4) The minimization of waste requiring treatment will be included in the EIS.

(5) Waste volume reduction options including the use of sodium nitrate, sodium nitrite purification, and sugar denitrification along with dry-cask storage of the resulting salts will be included in the EIS.

(6) The TWRS EIS will address using an existing (242-A) or new evaporator to minimize liquid waste.

Resource Recovery and Waste Minimization Issues Not to be Addressed in the TWRS EIS:

Issue No.

(3) The TWRS EIS will not evaluate the minimization of existing or new waste streams directed to the tanks. Each of the Hanford facilities with identified or projected tank waste streams will provide for the minimization of that waste. The TWRS EIS will evaluate the tank volume requirements based on the facility operator tank waste stream projections.

3.4.1.10 Health Risks, Safety, and Mitigation

Health risks, safety, and mitigation issues to be addressed in the EIS were the subject of public comments. From these comments, the following issues were identified.

Issues Identified

Issue No.

(1) The EIS should examine the explosion potential associated with vitrifying waste that contains a mixture of chemicals with a nitrogen component.

(2) Berms should be placed around tanks to avoid an explosion in a tank, which would result in explosions in other tanks.

(3) Neptunium-237 needs to be thoroughly evaluated and kept from the environment.

(4) An independent assessment of the potential threats posed to the environment by tank leaks is needed.

(5) One commentor supported resolving and eliminating all unresolved tank safety issues.

Health Risks, Safety, and Mitigation Issues to be Addressed in the TWRS EIS:

Issue No.

(1) The TWRS EIS will address the potential for explosion during the vitrification process and an analysis of potential safety and accident scenarios that could reasonably be anticipated for each of the alternatives.

(2, 3) The EIS will assess the potential for individual and multiple tank explosions, the potential release of neptunium-237 along with all other nuclides, and the environmental risk associated with tank leaks.

(4) The assessment of the potential risks associated with tanks leaks will be available for public and regulatory agency review as part of the EIS.

(5) Long-term resolution of tanks safety issues is the underlying basis of need for the TWRS program and the TWRS EIS. The EIS will identify and assess alternatives that will provide permanent solutions to tank waste safety issues.

Health Risks, Safety, and Mitigation Issues Not to be Addressed in the TWRS EIS: None identified.

3.4.1.11 Emissions, Effluents, and Monitoring

Emissions, effluents, and monitoring issues to be addressed in the EIS were the subject of public comments. From these comments, the following issues were identified.

Issues Identified

Issue No.

(1) Trapping radioactive gases in activated carbon filters and encasing them within lead and stainless-steel containers that are suitable for long-term storage was suggested.

(2) Options for treatment of waste (especially iodine-129, carbon-14, and tritium) to manage gaseous waste rather than discharging these to the atmosphere, even in a form diluted with uncontaminated air, were supported.

(3) Zero release of contaminants to air, water, and groundwater was called for.

(4) Adequately addressing tritium releases from the DSTs in the EIS was urged.

(5) Implementation of a vadose zone monitoring program for the tank farm to provide information for future remediation efforts was recommended.

(6) One commentor suggested that an operational tank leak detection program be outlined and considered in the EIS to correct leak detection and tank monitoring deficiencies.

Emissions, Effluents, and Monitoring Issues to be Addressed in the TWRS EIS:

Issue No.

(1) Radioactive gases will be filtered from exhaust air streams in all processes. To what extent activated carbon filters would be effective will be evaluated. The need for lead or stainless-steel containers as well as options for long-term storage and disposal will be considered in the TWRS EIS.

(2) The degree to which gaseous emissions can be remediated by recovery, concentration, and disposal will be addressed in the TWRS EIS.

(3) Each alternative will be evaluated to determine the extent by which releases to the air, water, soil, and groundwater are associated with implementation.

(4) The issue of possible tritium releases from DSTs will be addressed in the EIS.

(5) The vadose zone has been and will continue to be monitored. The need for additional alternative specific monitoring will be addressed in the EIS.

Emissions, Effluents, and Monitoring Issues Not to be Addressed in the TWRS EIS:

Issue No.

(6) The development of an operational tank leak detection program to correct leak detection and tank monitoring deficiencies is not within the scope of the TWRS EIS. DOE has an ongoing detection and monitoring program and improvements to that program are a DOE priority. However, the EIS will analyze the impacts associated with the continued management of the tank waste in the No Action alternatives.

3.4.1.12 Natural Resources Preservation

Natural resources preservation issues to be addressed in the EIS were the subject of public comments. From these comments, the following issues were identified.

Issues Identified

Issue No.

(1) The EIS should address State and Federal listed species and address the entire shrub-steppe habitat present at Hanford.

(2) The EIS should assess habitat variables in enough detail so that, once a site is chosen, alternatives within a site can be considered to minimize impacts to higher-quality habitat areas.

(3) The EIS should address the history of disturbances, and habitat variables should be estimated using transect or plot methods (variables to be considered should include: percent cover of cryptogam layer and percent cover of native grasses and forbs versus cheatgrass, and quality of the shrub component in terms of diversity and maturity).

(4) The EIS should present the results of the habitat evaluation in terms of discussion of relative habitat values at alternative sites, habitat values figured in the site assessment process, and the selection of the preferred site alternative.

(5) The EIS should consider ways to minimize environmental impacts during the construction phase of the project including the fate of excavated material and the environmental impacts associated with disposal.

(6) The EIS should address the condition of the land surface following completion of construction activities including the potential need for storm-water runoff control, plans for revegetation of some, or all, of the areas with native grasses and forbs to reduce the cheatgrass infestation (a revegetation plan should include a monitoring schedule to determine success of plantings, criteria that would determine failure and need for additional planting effort, and native plant seeds should be from the Columbia Basin area).

(7) The EIS should include options for transplanting the shrubs into areas undergoing restoration if the site chosen for construction contains mature shrubs.

(8) One commentor suggested an assessment of the impacts on the Columbia River ecosystem and associated natural and cultural resources.

Natural Resources Preservation Issues to be Addressed in the TWRS EIS:

Issue No.

(1) The evaluation of biological and ecological impacts in the TWRS EIS will address a range of relevant issues beyond exclusively TWRS impacts only on listed species.

(2) Impacts on the regional shrub-steppe habitat will be included.

(3, 4) Habitat value will be assessed before the start of construction, and losses will be mitigated based on the ecological value of the habitat disturbed. Alternative specific mitigation measures will be addressed in the TWRS EIS. Additional preparation of mitigation measures to be implemented will be included in the Mitigation Action Plan for the TWRS project. DOE is developing a Hanford Sitewide Mitigation Plan in cooperation with the State of Washington Department of Fish and Wildlife and the U.S. Fish and Wildlife Service. Negotiations with these agencies are in progress.

(5, 6) The EIS will assess the environmental impacts during construction and operations phases of the project for each of the alternatives. Mitigation of construction-phase impacts will be considered, as needed, to reduce identified impacts. Impacts associated with excavated material will also be addressed.

(7) The EIS will address the condition of post-construction land surfaces, including the potential need to revegetate. Mitigation measures will be identified for each alternative.

(8) The EIS will assess impacts to the environment including the Columbia River ecosystem, as well as cultural and natural resources.

Natural Resources Preservation Issues Not to be Addressed in the TWRS EIS: None identified.

3.4.2 Issues Added as a Result of Scoping

The scoping process provided DOE and Ecology with an opportunity to hear public concerns and suggestions associated with the scope, alternatives, and environmental issues relevant to the TWRS EIS. Modifications have been made to the scope, alternatives, and issues to be assessed in the EIS in response to public comments. The scope, alternative, and issues presented in the Notice of Intent as well as new issues identified during the scoping process are presented in Table 3.3. Section 4.0 provides an overview of the alternatives and environmental issues that will be addressed in the EIS.

Additionally, DOE and Ecology acknowledge public comments regarding the desire to expedite the cleanup of tank wastes and to ensure that the goals and values embodied in the TPA are maintained. The agencies are committed to production of a cost-effective and timely EIS that results in a Record of Decision that protects human health and the environment.

Table 3.3 Issues Identified During Public Scoping that will be Addressed in the TWRS EIS

Topic	Issue
EIS Scope and Content	Identify long-term disposal method.
	Include all tank wastes in the EIS scope.
	Identify cumulative impacts associated with storage and disposal of Hanford wastes.
	Address decontamination and decommissioning and closure of existing TWRS facilities.
	Address siting of all TWRS facilities (including storage and disposal).
	Compare short-term environmental impacts associated with waste retrieval to impacts related to in-tank disposal.
	Assess interim storage of HLW at Hanford.
	Address impacts associated with new tanks and tank farm infrastructure improvements.
	Limit duplication of analysis contained in the Technical Option Report.
TWRS EIS Alternatives	Address in-tank stabilization and/or disposal of tank waste.
	Address options to use grout for waste stabilization and storage.
	Address RCRA compliance issues.
	Address Hanford Site for storage of low-level vitrified waste.
	Provide costs and environmental impacts comparisons for waste separation and vitrification.
	Provide analysis of interim storage and transportation of tank wastes in railcars.
	Address waste disposal for future retrieval.
	Large-cask repository disposal of minimized waste should be compared to vitrification alternatives.
Closure and Land-Use Restrictions	Address the history of past land disturbances.
	Determine future land-use restrictions.
	Address tank farm closure and D&D of existing facilities and facilities constructed to implement the TWRS alternatives.
	Minimize the area set aside for long-term disposal.
Vitrification	Analyze vitrification technology options.
	Address shielding and encasement options for vitrified materials using cask or canister construction materials (e.g., lead, stainless-steel, and contaminated steel and cement materials currently onsite).
	Provide analysis on the vitrification of the encapsulated cesium and strontium.
	Analyze the in-tank vitrification of all tank waste.
	Address costs and environmental impacts associated with storage of unvitrified wastes.
	Address feed materials for the vitrification process (e.g., borosilicate, sodium nitrate, and sodium carbonate).
	Determine the need for an interstitial filler.

Table 3.3 Issues Identified During Public Scoping that will be Addressed in the TWRS EIS (cont'd)

Topic	Issue
Grout	Analyze the use of grout for LLW stabilization.
Waste Characterization	Address neptunium contamination.
	Address the costs and environmental impacts of combining SST and DST wastes.
	Address the quality and sufficiency of existing waste characterization data.
Waste Storage and Retrieval	Address freeze barrier isolation of tank waste during cleanout operations or in-tank processing.
	Address waste retrieval options and tank integrity.
	Address environmentally benign barrier or containment options.
	Minimize the level of retrieval of sludges and solids.
Waste Treatment	Analyze the use of solvent extraction to remove transuranics.
	Address options to process the waste into HLW and LLW.
Resource Recovery and Waste Minimization	Address the use of ion exchange to concentrate radionuclides and reduce waste volume.
	Determine the use of sugar denitrification as a waste minimization option.
	Address all options for minimization of waste (especially iodine-129, carbon-14, and tritium).
	Determine the possibilities of resource recovery from tank wastes.
	Analyze waste volume reduction options including use of an evaporator to minimize liquid waste.
Health Risks, Safety, and Mitigation	Determine tank explosion potentials.
	Provide an independent assessment of threats.
	Determine options for safe disposition of ferrocyanide compounds and tritium.
	Assess the emergency response requirements of alternatives.
Emissions, Effluents, and Monitoring	Address potential releases to air, water, and groundwater for each alternative.
	Analyze operational tank leak detection and monitoring program options.
	Consider technologies such as filters or treatment options to minimize the releases of gases to the atmosphere.
	Trap, treat, and store long-term radioactive and hazardous gases.
Natural Resource Preservation	Address the impacts on State and Federal listed species.
	Analyze the impacts on shrub-steppe habitat present at Hanford.
	Determine habitat variables assessed so alternatives within a site can be considered to minimize impacts to higher quality habitat areas.
	Minimize construction impacts and consider post-construction mitigation.
	Address use of native plants and seeds and transplanting to restore impacted land.
	Address impacts on the Columbia River ecosystem and associated natural and cultural resources.

4.0 SCOPE, CONTENT, AND ALTERNATIVES

The proposed Federal action for the TWRS is to retrieve, pretreat, immobilize, store, and dispose of Hanford's tank waste, as well as encapsulated strontium and cesium. NEPA requires Federal agencies to assess the environmental impacts of the proposed action, its reasonable alternatives, as well as the No Action alternative. SEPA requires that agencies within Washington State evaluate an action's reasonable alternatives and their potential environmental impacts prior to the State approving the action. The TWRS EIS will address impacts to the environment, onsite workers, and the public from construction and operation of the range of reasonable alternatives, including no action. Based on comments received during the scoping period, the scope, alternatives, and issues to be addressed in the TWRS EIS have been modified. An annotated outline of the content of the TWRS EIS is provided in Appendix C. The remainder of this section summarizes the process used to develop the alternatives for analysis in the EIS and describes the alternatives that will be addressed in the EIS.

4.1 ALTERNATIVES

There are a wide range of technologies that are potentially applicable to treatment of tank wastes. One of the challenges for DOE and Ecology is to eliminate technologies that are not viable and develop a range of reasonable alternatives for presentation in the TWRS EIS. This section describes how the alternatives were developed and how they will be presented in the EIS.

The distinction between technologies and alternatives is important. Technologies are specific processes (e.g., cesium ion exchange) that relate to a component (e.g., retrieval or treatment) of an alternative. Alternatives consist of a set of technologies that have been engineered to fit together, forming an overall plan for remediation. In other words, full alternatives are made up of a number of technologies linked together.

The first step in the process to develop alternatives was to screen out technologies that were not viable. The full range of available technologies for each component of the proposed action was evaluated and technologies that were not viable were eliminated from further consideration. The technologies that were eliminated by this screening process will be briefly described in Appendix C of the TWRS EIS. The description of these technologies will be accompanied by a discussion of why the technology is not a valid option for selection by decision-makers.

Following the screening-out of technologies that were not viable, a large number of potential technologies still existed for inclusion in the EIS. It would not be possible to develop alternatives which include all of the potential combinations of technologies in the EIS. Therefore, alternatives were developed to bound the full range of reasonable alternatives. Upper, lower, and intermediate bounding alternatives were developed in terms of costs, risks, and technologies. In this manner, the full range of technologies and alternatives will be included in the EIS.

Since full alternatives must be developed to perform detailed analysis in the EIS, there are many technologies for individual components of the alternatives which may not be included. The technologies which could substantially change the impacts of the full alternative will be identified and presented in the EIS as subalternatives. The EIS will contain a description of the subalternatives and their potential applications as well as a description of the major differences in potential environmental impacts between each subalternative and the associated bounding full alternative. The level of analysis of the subalternatives to be presented will vary depending on the magnitude of the potential impacts. In certain cases, there are technologies which will not be included in any of the alternatives. These technologies will be included in the EIS appendices.

Through the process previously described, the following full alternatives and subalternatives were developed for analysis in the EIS (Figure 4.1).

Tank Waste Alternatives

- No Action alternative (Section 4.1.1)
- Minimal Retrieval (In Situ Vitrification) alternative (Section 4.1.2)
  - Fill and Cap subalternative (Section 4.1.2.1)
- Selective Retrieval alternative (Section 4.1.3)
- Extensive Retrieval (Ex Situ Vitrification) alternative (Section 4.1.4)
  - No Separations (Vitrification or Calcination) subalternative (Section 4.1.4.1)
  - Extensive Separations subalternative (Section 4.1.4.2)

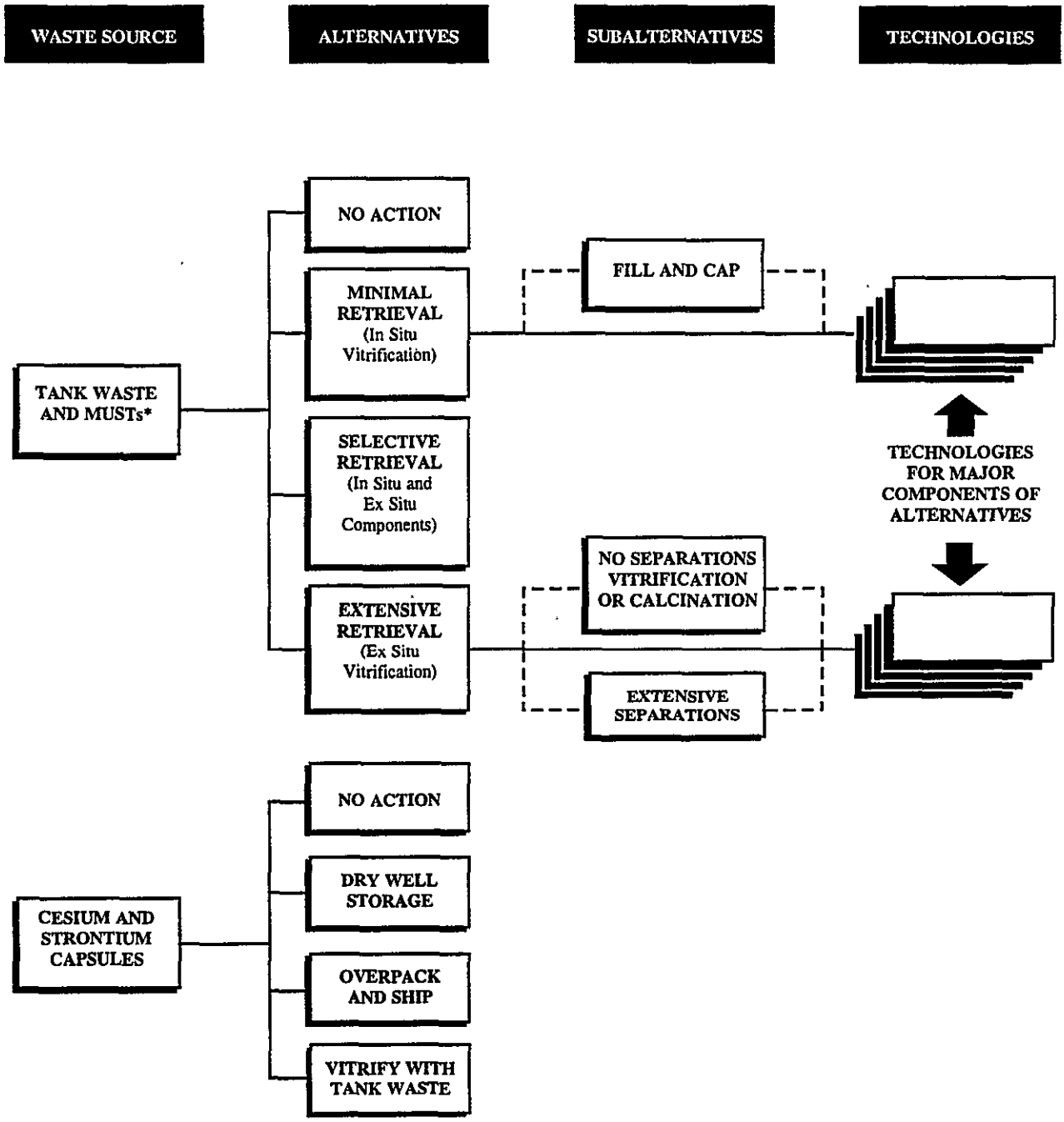
Capsules Alternatives

- No Action alternative
- Dry Storage alternative
- Overpack and Ship alternative
- Vitrify with Tank Waste alternative

There have been no capsules subalternatives identified for inclusion in the TWRS EIS.

Each of the tank waste alternatives and subalternatives and capsules alternatives are described in the following sections.

Figure 4.1 Relationship Between TWRS EIS Alternatives



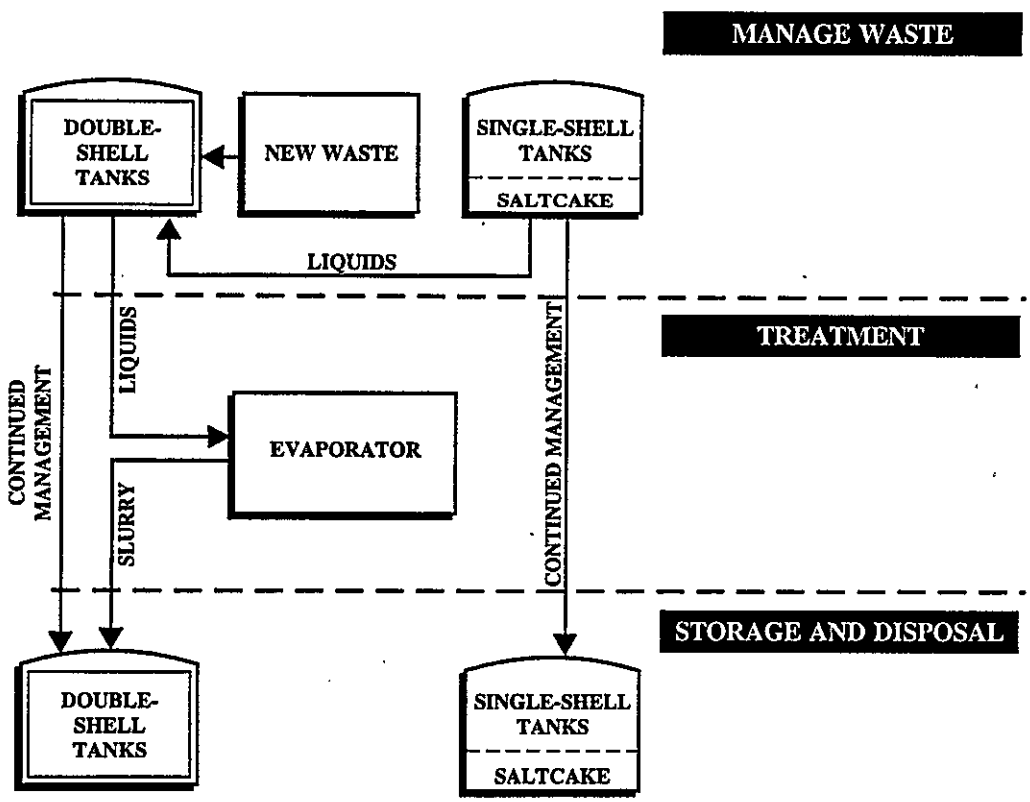
*MUSTs: Miscellaneous Underground Storage Tanks

4.1.1 Tank Waste - No Action Alternative

No action for the tank waste (Figure 4.2) means continued safe management of the tank farms. No remediation of the tank waste would occur but DOE would continue to monitor and maintain the tank and support facilities and perform those measures necessary to continue safe storage of the wastes.

Maintenance activities would include monitoring and upgrading instrumentation and ventilation equipment. Administrative controls would be maintained to prevent inadvertent human intrusion. Since it is not reasonable to assume that administrative controls can be maintained forever, a time must be assumed when the management of the tank farms would end. For the purpose of evaluation in the EIS, administrative controls will be assumed to be effective for 100 years and then the controls will cease and human intrusion could occur.

Figure 4.2 Tank Waste - No Action Alternative



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DOE and Ecology have no plans or policies that would permit the loss of institutional control over radiological, hazardous, or mixed waste. However, for the purposes of analysis in the TWRS EIS, it will be assumed that institutional controls would end and human intrusion could occur after 100 years past the end of the disposal process.

Saltwell pumping of the SSTs is an ongoing operation. The majority of the free liquids in the SSTs will have been removed and these wastes will no longer represent a threat of releasing liquids to the groundwater until a point in the distant future. Therefore, no additional management action other than monitoring, infrastructure upgrades, and maintaining the tanks is needed for the SSTs during the 100-year administrative control period. The DSTs have an estimated design life of 50 years. The tanks will need to be replaced to prevent leaks and thereby continue the safe management of the tank waste. Since the replacement of the tanks is a reasonably predictable future requirement of continued tank farm management, replacement of the tanks will be considered as a connected action associated with the No Action alternative. The condition of the tanks would be continually monitored and those tanks determined to be at risk of failure would be replaced. For evaluation purposes, it is assumed that the existing DSTs will be replaced at the end of their existing design life (in approximately 50 years) and again 50 years after that, just prior to the end of the 100-year administrative control. For each of these 50-year intervals (re-tanking campaigns), it is reasonable to assume that new evaporation facilities will also be required and will be discussed as a connected action associated with the No Action alternative.

The Hanford DST integrity assessments have not been conducted at this time. These assessments will allow the accuracy of the 50-year tank wall corrosion rate calculation to be confirmed. Should the DST integrity assessments indicate an expected DST design life that is different from the 50-year approximation prior to the issuance of the final TWRS EIS, the TWRS EIS will reflect the new estimate.

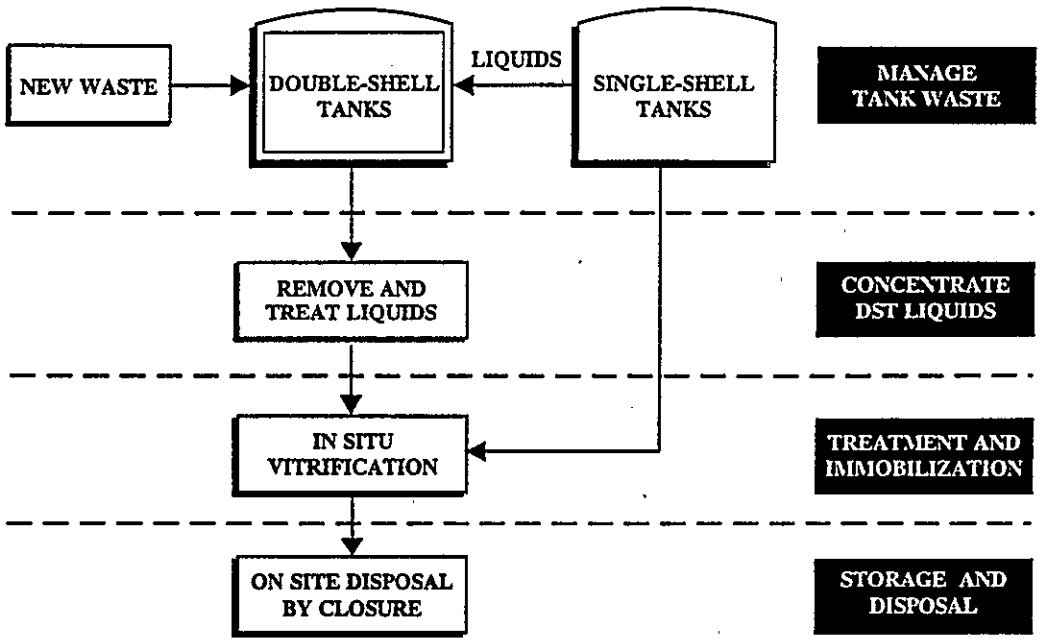
The emptied DSTs would be backfilled, as necessary, with gravel to prevent collapse. It is currently assumed that one percent of the waste volume per tank would remain in the old tanks. A permanent marker would be erected around the backfilled tank. Security and facility controls would be maintained to protect workers and the public for 100 years.

4.1.2 Tank Waste - Minimal Retrieval (In Situ Vitrification) Alternative

The Minimal Retrieval (In Situ Vitrification) alternative involves stabilizing the wastes in the tanks (Figure 4.3). Silica in the form of sand would be mixed into the waste and electrodes would be inserted into the waste. Electrical current would be applied until the waste and silica are vitrified (melted). The vitrified waste would cool into a glass-like material. The in situ vitrification process would include pollution abatement controls to ensure that all effluents and emissions are within regulatory standards.

As part of closure, a multi-layer barrier (e.g., Hanford Barrier) consisting of layers of basalt riprap, gravel, and soil would be constructed over the tanks to isolate them. Surface and subsurface markers would be used to mark the location. Security and administrative controls would be implemented and maintained for 100 years. This alternative was developed from technologies identified during the scoping process.

Figure 4.3 Tank Waste - Minimal Retrieval (In Situ Vitrification) Alternative



4.1.2.1 Tank Waste - Fill and Cap Subalternative

A subalternative to In Situ Vitrification is the Fill and Cap subalternative. Under this subalternative, the waste would be disposed of in-tank by filling the tanks and placing an earthen cover over them to inhibit infiltration of rain water and to prevent inadvertent human intrusion.

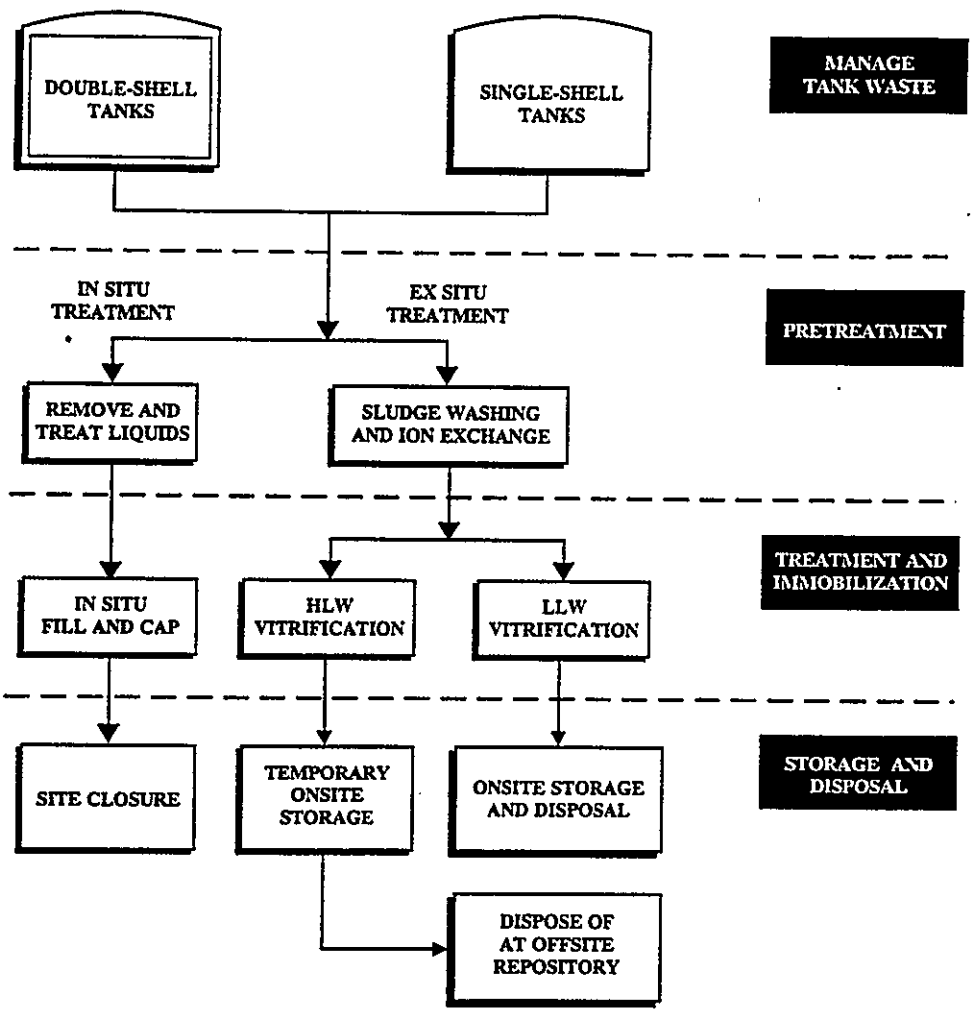
Under the Fill and Cap subalternative, a hole would be cut in the top of the tank and the tank would be filled with sand and gravel or grout. There would be no measures taken to vitrify or grout stabilize the wastes and the tanks would be filled to prevent collapse of the tank tops.

As part of closure, a multi-layer barrier (e.g., Hanford Barrier) consisting of layers of basalt riprap, gravel, and soil would be constructed over the tanks to isolate them. Surface and subsurface markers would be used to mark the location. Security and administrative controls would be implemented and maintained to protect workers and the public. This subalternative was developed from technologies identified during the scoping process.

4.1.3 Tank Waste - Selective Retrieval Alternative

The Selective Retrieval alternative is a combination of the Extensive Retrieval alternative (Section 4.1.4) and the Minimal Retrieval alternative (Section 4.1.2). This alternative involves ex situ immobilization and disposal of some wastes and in situ immobilization and disposal of the remaining waste (Figure 4.4). This may include complete or partial retrieval from any individual tank depending on the radioactive and chemical contents of the tank. The alternative results from the existing characterization data, which show that some of the tanks contain waste with relatively high concentrations of radioactive and chemical constituents while others contain very few contaminants. The waste that must be retrieved, immobilized, and disposed of outside of the tanks would be remediated in accordance with the Extensive Retrieval alternative described in Section 4.1.4. The waste to be disposed of in-tank would be remediated in accordance with the Minimal Retrieval alternative described in Section 4.1.2. This alternative was developed from technologies identified in the TPA and during the public scoping process.

Figure 4.4. Tank Waste - Selective Retrieval Alternative



4.1.4 Tank Waste - Extensive Retrieval (Ex Situ Vitrification) Alternative

This alternative involves retrieving as much of the waste as practicable from the tanks and separating it into HLW and LLW streams (Figure 4.5). Each waste stream would be vitrified into a glass form suitable for storage or disposal in a newly constructed facility. The HLW would be transported offsite to the proposed national HLW repository and the LLW would be placed in retrievable disposal vaults at Hanford. This alternative is based on the integrated system outlined in the TPA. This alternative involves the following actions.

Retrieval

DST waste would be extracted from tanks using slurry pumping. Hydraulic sluicing would be used to remove SST waste. If hydraulic sluicing did not meet waste retrieval goals, robotic arm-based retrieval methods would be employed. Pipelines would transfer waste from the tank farms to a pretreatment facility. Additional retrieval technologies will be addressed in the TWRS EIS Appendix B, Description of Alternatives and Subalternatives.

Pretreatment

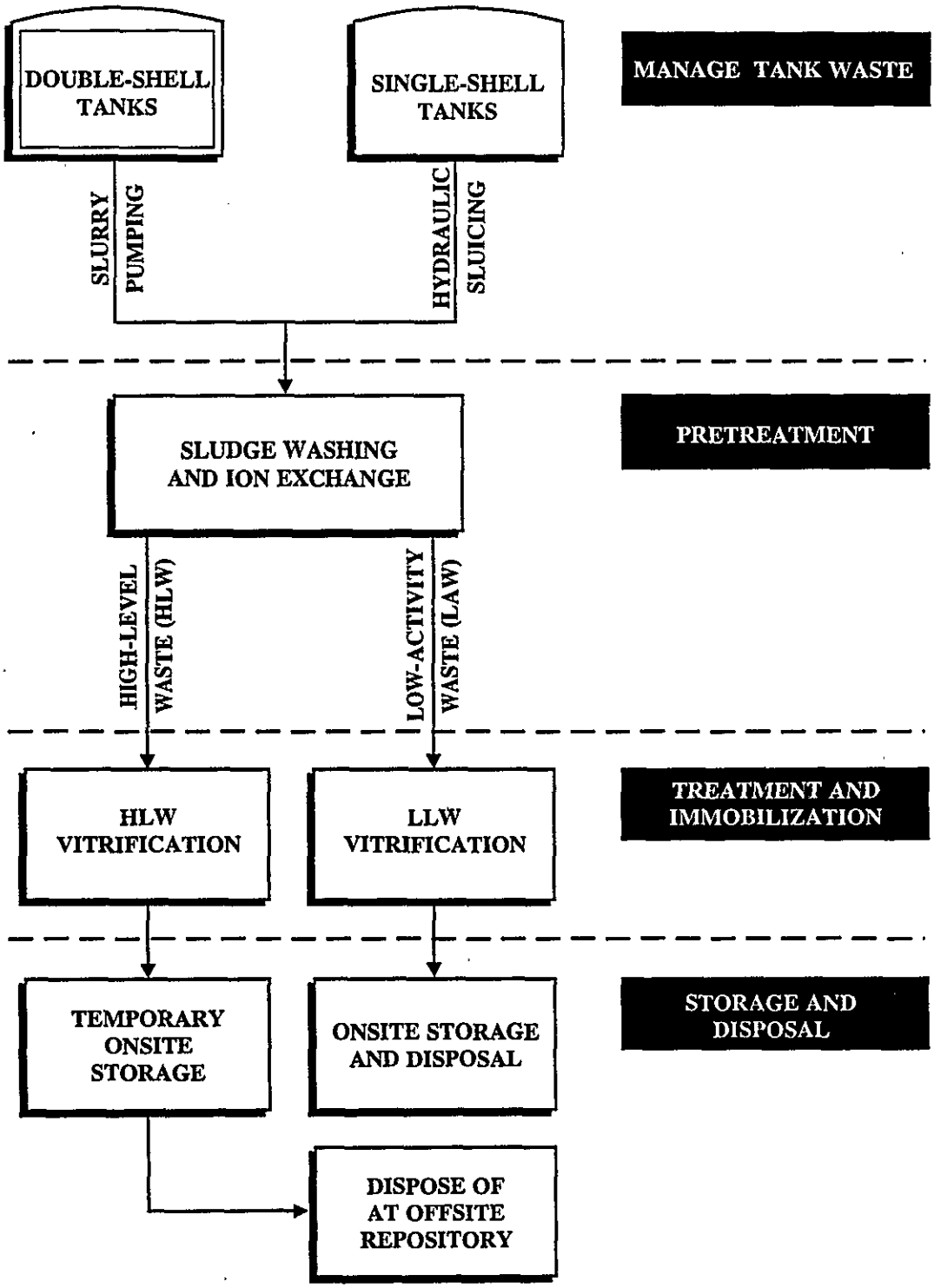
Pretreatment would consist of sludge washing, ion exchange, solids and liquids separations, and chemical processes to separate the waste into HLW and LLW streams. The solids in the tank would be washed to dissolve salts to the extent practical and those salts bearing liquids will be added to the supernatant stream going to cesium removal. The sludge remaining in the tanks would be washed to remove additional solids and to minimize the feed to the HLW vitrification facility. The Extensive Separations subalternative includes the use of multiple pretreatment modules designed to minimize the volume of HLW.

Immobilization

LLW would be pumped into a LLW vitrification facility where it would be mixed with feed material such as, borosilicate or silica, and vitrified into glass. Vitrification is a high-temperature process where the waste is blended with additives and fused into a glass-like form suitable for disposal. The vitrification facility would include pollution abatement controls to ensure that effluents and emissions are within regulatory standards.

The HLW would be routed from a lag storage facility, which would temporarily store waste awaiting treatment, to a HLW vitrification facility where it would be mixed with feed material and then fused into glass. The HLW glass would be sent to a storage facility where it would await shipment to a permanent HLW repository for disposal. The HLW vitrification facility would include pollution abatement controls to ensure that all effluents and emissions are within regulatory standards.
The public comment period identified the areas of concern regarding the vitrification process. The EIS will address various feed materials for the vitrification process including borosilicate, sodium nitrate, and sodium carbonate. Various forms of the vitrified waste will be addressed in the EIS, including

Figure 4.5 Tank Waste - Extensive Retrieval (Ex Situ Vitrification) Alternative



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ingot and cullet (marbles and clinkers). Depending on the form, the need for an interstitial filler (graphite or lead) will be examined. Cask or canister construction materials will be discussed and will include lead, stainless-steel, and the contaminated steel and cement materials currently onsite.

Alternative LLW forms will be examined in the TWRS EIS Appendix B, Description of Alternatives and Subalternatives.

Disposal

The disposal of radioactive waste is regulated by DOE and the Nuclear Regulatory Commission. DOE's guidance for classifying wastes is contained in DOE Order 5820.2A, Radioactive Waste Management. The Order classifies wastes into HLW, LLW, and transuranics. Specific guidance includes near-surface disposal of LLW and deep geologic disposal of HLW and transuranics. The Nuclear Regulatory Commission regulates and licenses the disposal of radioactive materials from non-DOE facilities and HLW for DOE facilities. Nuclear Regulatory Commission guidance on waste classification is contained in 10 CFR Part 61. DOE disposal of LLW is not currently regulated by the Nuclear Regulatory Commission; however, commission rulings regarding waste treatment and waste feed limitations will affect the classification of wastes subject to HLW disposal requirements.

The vitrified LLW glass would be placed into a near surface retrievable disposal facility on the Hanford Site. A Hanford Barrier would be constructed over the retrievable LLW disposal site to inhibit migration of contaminants or intrusion by humans or animals. Markers would be used to identify the location of the storage or disposal facility. Security and administrative controls would be implemented and maintained for 100 years to protect workers and the public.

The vitrified HLW glass would be placed in an above-ground storage facility at the Hanford Site. It would then be shipped to a national HLW repository for permanent disposal according to a schedule that would be developed with the national HLW repository. HLW forms to be disposed of at this repository must meet the repository's waste acceptance criteria.

4.1.4.1 Tank Waste - No Separations (Vitrification or Calcination) Subalternative

The No Separations subalternative is also a variation of and similar to the Extensive Retrieval (Ex Situ Vitrification) alternative. Under this subalternative, the waste would be retrieved from the tanks but would not be separated into HLW and LLW streams. Instead, all of the waste would be vitrified without any pretreatment and then placed in storage for shipment to the proposed national HLW repository for final disposal, and there would be no LLW to be disposed of onsite. This subalternative was developed from technologies during the scoping process.

Calcination is a process identified during the scoping period. Sugar calcination refers to a process in which sugar is mixed with the tank waste prior to calcination. Calcination is the process of heating precipitats or residues to a temperature that is sufficiently elevated to decompose chemical compounds such as hydroxides or nitrates. It differs from vitrification in that calcination temperatures do not cause

the reacting materials to melt and form a glass. At the calcination temperature, sodium nitrate and nitrate in the tank wastes would be reduced by sugar to form nitrogen-oxides, which would be removed as an offgas. After the removal of nitrate and nitrite, a stable sodium carbonate would be formed.

No pretreatment of the wastes would be performed and no LLW would be disposed of onsite. Sugar calcination will be discussed as an option for the Ex Situ No Separations subalternative to the Extensive Retrieval (Ex Situ Vitrification) alternative.

4.1.4.2 Tank Waste - Extensive Separations Subalternative

The Extensive Separations subalternative is a variation of and similar to the Extensive Retrieval (Ex Situ Vitrification) alternative. Under the Extensive Separations subalternative, the waste would be recovered from the tanks and a complex series of processing steps would be performed during pretreatment to separate the LLW from the HLW. A series of chemical processing operations would be used to separate HLW elements such as uranium, plutonium, neptunium, thorium, americium, lanthanide (rare earth metals) series elements, cesium, strontium, and technetium from the waste. Following the pretreatment process, the activities to be performed under this subalternative would be similar to those under the Extensive Retrieval (Ex Situ Vitrification) alternative. The HLW would be vitrified, stored onsite, and then disposed of at the national HLW repository. The LLW would be vitrified and placed in a near surface retrievable disposal facility at the Hanford Site. This subalternative would result in a smaller volume of HLW being sent to the national HLW repository and would increase the volume of LLW for retrievable disposal at the Hanford Site. This subalternative was developed from technologies identified during the scoping process.

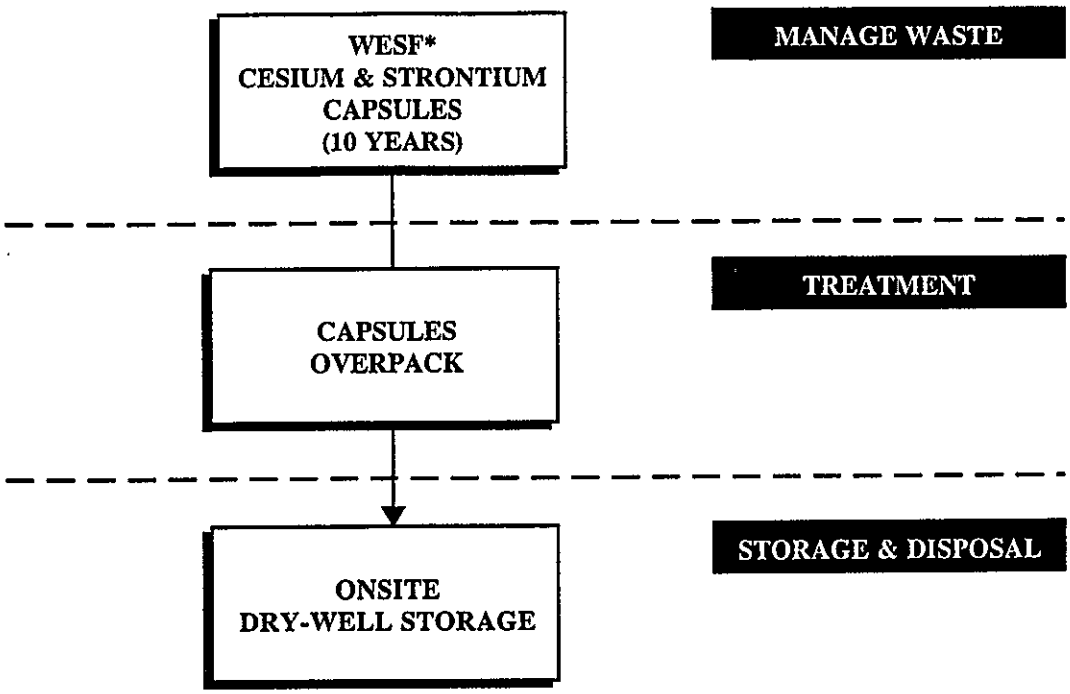
4.1.5 Capsules - No Action Alternative

No action for the capsules would be continued safe management. The capsules are currently stored in water basins in the Waste Encapsulation and Storage Facility at Hanford. Additional capsules are being returned to Hanford and are also to be stored in the water basins. The capsules and basins would be maintained and administrative controls would be implemented to prevent inadvertent human intrusion. The Waste Encapsulation and Storage Facility is scheduled to be decontaminated and demolished within the next 10 years, and administrative controls would be assumed effective until an alternate waste storage facility would be constructed.

4.1.6 Capsules - Dry Storage Alternative

The Capsules Dry Storage alternative (Figure 4.6) would involve removing the capsules from their current storage in water-filled basins at the Waste Encapsulation and Storage Facility and overpacking them into canisters for onsite dry storage. Dry storage consists of placing the sealed overpack canisters into onsite subsurface wells at specific intervals to provide safe long-term passively-cooled storage. It is assumed that the capsules would remain in dry-storage with administrative controls in effect until the 100-year administrative control period ends.

Figure 4.6 Capsules - Dry Storage Alternative



*WESF: Waste Encapsulation Storage Facility

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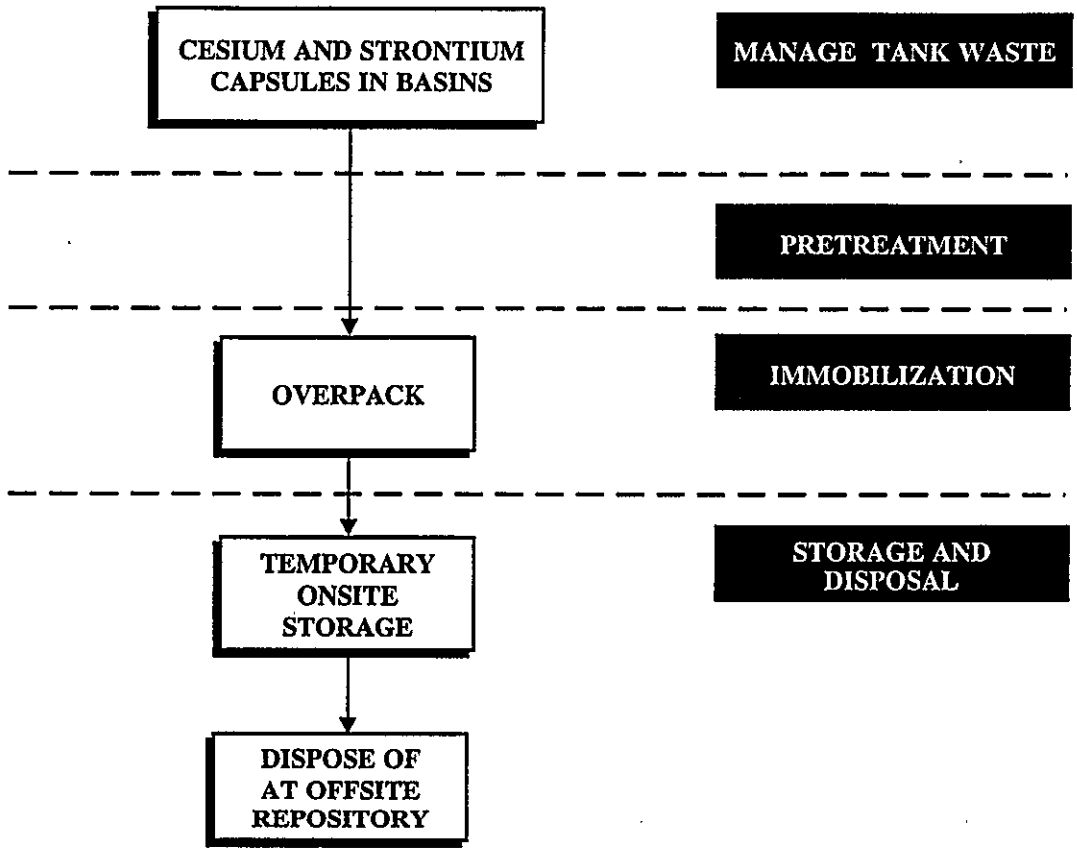
4.1.7 Capsules - Overpack and Ship Alternative

Cesium and strontium capsules presently at Hanford, and capsules on loan that are being returned to Hanford, would be packed into shipping canisters and stored at an onsite HLW storage facility until a permanent HLW repository is completed (Figure 4.7). During interim storage, the capsules would be inspected and maintained. Upon completion of the permanent HLW repository, the capsules would be transferred to the HLW repository for disposal.

4.1.8 Capsules - Vitrify with Tank Waste Alternative

Under the Vitrify With Tank Waste alternative, the cesium and strontium capsules currently stored at the Waste Encapsulation and Storage Facility and those on loan that are being returned to Hanford would be stored at the Waste Encapsulation and Storage Facility until a HLW vitrification facility is ready to treat waste (Figure 4.8). The capsules would be transported to the tank waste pretreatment facility where the cesium and strontium would be removed from the capsule shells. The cesium and strontium would be chemically processed, if necessary, and then added to the HLW vitrification stream. The cesium and strontium would then be contained within the tank HLW stream and would be stored and disposed as discussed under the Extensive Retrieval (Ex Situ Vitrification) alternative.

Figure 4.7 Capsules - Overpack and Ship Alternative



4.1.9 Other Technologies

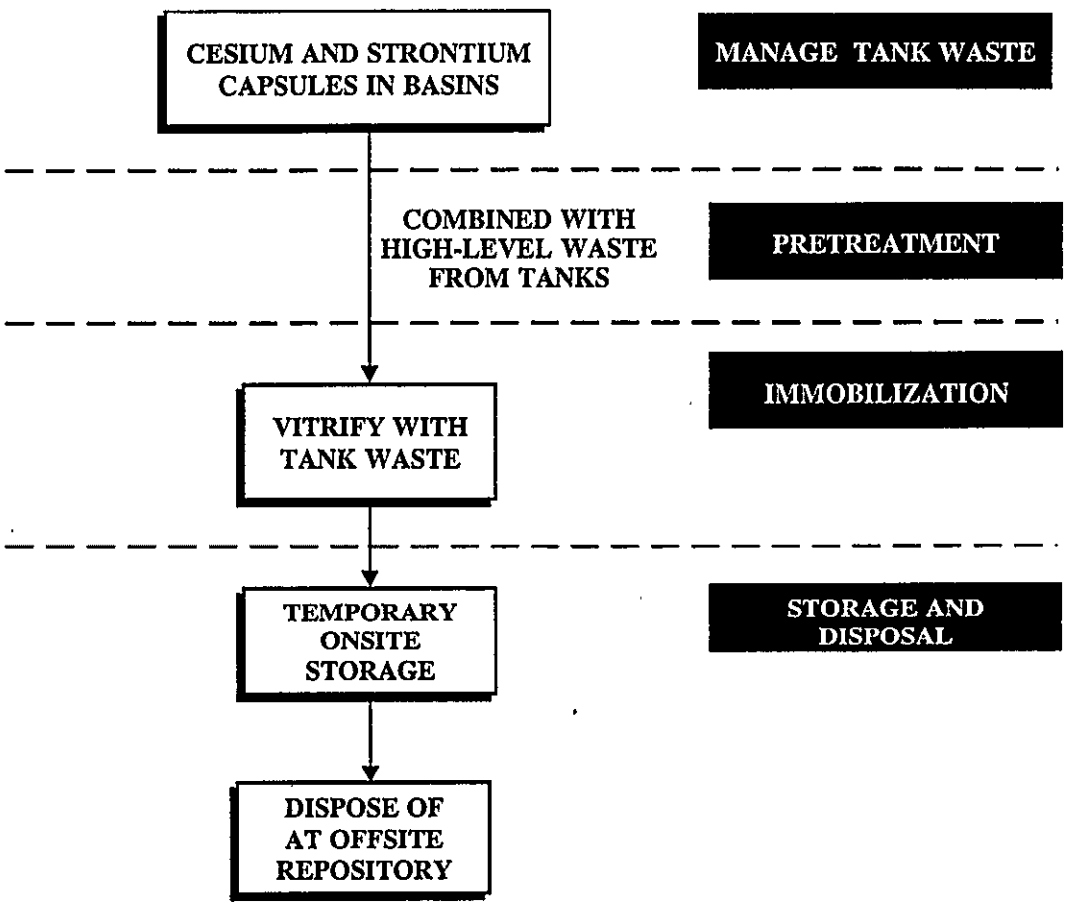
A number of technologies will not be included in any of the alternatives or subalternatives discussed in Sections 4.1.1 - 4.1.7. These technologies would not substantially change the impacts of the full alternatives and are therefore bounded by the alternatives and subalternatives analyses. However, these technologies will be included in the EIS appendices. For example, a technology identified during the public scoping process involves the calcining (low temperature roasting) of the HLW. This waste could be placed into casks and shipped directly to a permanent HLW repository for final disposal without putting the waste through the vitrification process. Other examples include the use of grout as a stabilization technology for the in-tank disposal of tank waste and onsite waste transportation options.

4.1.10 Interim Actions

DOE and Ecology have identified the possible need for the construction of new tank capacity to resolve tank safety issues and construction of a cross-site waste transfer system as an interim action to the TWRS EIS.

DOE and Ecology are therefore co-preparing a separate interim action SIS of Hanford Tank Waste SIS EIS for these projects. The TWRS EIS will address the cumulative impacts of the TWRS program including the SIS EIS and any other TWRS interim actions.

Figure 4.8 Capsules - Vitrify with Tank Wastes Alternative



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4.1.11 Tank Farm Closure

The TWRS EIS will address closure to the extent possible at this time, however insufficient information is available at this time to support final decision-making regarding closure. There are several potential options for final closure under RCRA. Although specific detailed actions necessary to achieve closure have not been developed, the basic RCRA closure options offer several levels of retrieval, in-tank disposal, monitoring, and controls that could be applied for closure. The TWRS EIS will, therefore, address closure in a manner that will allow the decision-makers to understand the long-range impacts of in-tank versus out-of-tank approaches to tank remediation.

4.2 ENVIRONMENTAL IMPACTS ANALYSIS

Potential environmental issues identified prior to the public scoping process and listed in the Notice of Intent, as well as those identified in comments received during the scoping process, will be addressed in the EIS. The EIS will present information that describes the present environmental conditions relevant to the TWRS EIS proposed action and evaluate and compare the direct and cumulative environmental impacts associated with each of the alternatives. The environmental issues that will be addressed in the EIS include:

- Exposure of the public and onsite workers to releases of radiological and nonradiological materials during normal operations and from reasonably postulated accidents, including explosion potentials associated with vitrifying wastes that contain a mixture of a chemical with a nitrogen component;
- Pollution prevention, waste minimization, and resource recovery during construction and operation of the selected facilities identified in the Record of Decision;
- Air and water quality and other environmental consequences from normal operations and potential accidents;
- Cumulative effects of operations at the Hanford Site, including relevant impacts from other past, present, and reasonably foreseeable activities at the Site;
- Environmental justice issues including potential disproportionately high and adverse impacts on minority populations and low-income populations;
- Impacts to endangered species, floodplain and wetlands, archaeological, and historical sites;
- Future decontamination and decommissioning decisions;
- Normal transportation and postulated transportation accidents;
- Socioeconomic impacts on surrounding communities;
- Unavoidable adverse environmental effects including impacts on listed species and shrub-steppe habitat;
- Short-term uses of the environment versus long-term productivity;
- Irretrievable and irreversible commitment of resources, including land-use restrictions; and
- Cumulative impacts associated with storage and disposal of all Hanford wastes; Extensive Retrieval alternative, waste retrieval, waste pretreatment, waste treatment, transportation of waste offsite, as well as impacts associated with the No Action, Minimal Retrieval, and Selective Retrieval alternatives and subalternatives.

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5.0 CONSULTATION WITH AGENCIES, TRIBES, AND THE PUBLIC

Federal agencies are required by NEPA and CEQ regulations to consult with appropriate Federal, Tribal, and State organizations as part of the NEPA process. Similarly, SEPA requires State agencies to consult with affected governments before taking action. Various Federal and State agencies may have responsibilities for certain geographic areas, natural resources, or environmental regulations that may be affected by the proposed action. Federal and State laws regarding cultural, historical, and archaeological resources as well as treaties and intergovernmental agreements require consultation with Tribes that may be affected by the proposed action.

5.1 FEDERAL AND STATE AGENCY AND TRIBAL CONSULTATION

To ensure full compliance with NEPA and SEPA regulations and to assist in keeping concerned agencies informed of DOE and Ecology actions, the consultations listed in Table 5.1 will be conducted. Consultations will consist of written correspondence regarding the proposed action, alternatives, and environmental impacts to identify regulatory requirements, issues of concern, and information available from the Federal or State agency or Tribal government. Written consultations will occur early in the process of developing the Draft EIS so that the results of the consultation can be included in the document. In addition to written consultation, when appropriate, DOE and Ecology may meet or confer with the agencies and Tribes listed in Table 5.1 to clarify issues and attain an understanding of the concerns or information provided by the agencies and Tribes. All consultations will be documented in the Draft EIS and copies of consultation letters and responses by the listed agencies and Tribes will be available for public review in the DOE Reading Rooms and Information Repositories (Table 1.1).

In addition to consultations conducted prior to the release of the Draft EIS, DOE and Ecology will provide all consulting agencies and Tribes with copies of the Draft EIS for review and comment during the public comment period. Also, the agencies and Tribes will be provided with copies of this Implementation Plan, Notices of Availability, the Final EIS, the Record of Decision, and the Mitigation Action Plan.

5.2 PUBLIC CONSULTATION

Federal agencies are required by CEQ, NEPA regulations, and Executive Order 12898 to involve the public, including minority populations and low-income populations, in the decision-making process associated with proposed actions that have potentially significant impacts on the human environment. SEPA has similar requirements for State agencies. Public involvement provides the public with access to information and the opportunity to participate meaningfully in the decision-making process at key EIS milestones. To facilitate access to information regarding NEPA and SEPA process, the TWRS EIS decision-making process, the proposed action, alternatives, environmental impacts, and regulatory compliance, DOE and Ecology will make project documents available to the public in DOE Reading Rooms and Information Repositories (Table 1.1). Briefing sessions will be held with the Hanford Advisory Board, stakeholders, public interest groups, and others prior to the release of decision-documents (e.g., Draft EIS, Final EIS, Record of Decision, and Mitigation Action Plan).

To facilitate public participation, DOE and Ecology conducted a public scoping process, which is described in Section 3.0. Upon completion of the Draft EIS, the public will be notified of the availability of the document for review. Copies of the Draft EIS will be distributed to interested individuals, public interest groups, agencies, and Tribes. DOE and Ecology will schedule a 45-day public comment period on the Draft EIS. During the comment period, the public and others will have the opportunity to submit written comments on the Draft EIS. Additionally, DOE and Ecology will schedule a series of public comment hearings at which the public will have the opportunity to submit oral and written comments. Prior to completion of the Final EIS, DOE and Ecology will consider comments on the Draft EIS.

The Final EIS will include a listing of public comments and the responses from DOE and Ecology to each comment. The Final EIS, after approval by DOE and Ecology and issuance of a Notice of Availability, will be distributed to the public and others and placed for public inspection in DOE Reading Rooms and Information Repositories.

The final decision regarding the proposed action will not be made until at least 30 days following the publication of the Final EIS Notice of Availability. DOE and Ecology will review the Final EIS and then prepare a Record of Decision. The Record of Decision will be published in the Federal Register and be available for public inspection in DOE Reading Rooms and Information Repositories. Following the issuance of the Record of Decision, a Mitigation Action Plan will be prepared to address mitigation commitments contained in the Record of Decision. Copies of the plan will be available for public inspection in DOE Reading Rooms and Information Repositories (Table 1.1).

Requests for information regarding TWRS EIS Federal and State agency and Tribal consultation and public participation can be received by calling the Hanford Cleanup Toll-Free Line at 1-800-321-2008 or by writing to either:

Carolyn Haass
DOE TWRS EIS NEPA Document Manager
DOE Richland Operations Office
P.O. Box 1249
Richland, Washington 99352

Geoff Tallent
Ecology TWRS EIS Project Lead
Washington State Department of Ecology
P.O. Box 47600
Olympia, Washington 98504-7600

Table 5.1 Agency and Tribal Consultations

Subject Area	Legislation or Requirement	Agency
Endangered Species	Endangered Species Act	U.S. Fish and Wildlife Service Washington Department of Fish and Wildlife
Migratory Birds	Migratory Bird Treaty Act	U.S. Fish and Wildlife Service
Archaeological, Historical, and Cultural Resources	National Historic Preservation Act Archeological Resources Protection Act Antiquities Act American Indian Religious Freedom Act Native American Graves and Repatriation Act Federal Cave Protection Act	National Park Service U.S. Bureau of Land Management State Historic Preservation Officer U.S. Advisory Council on Historic Preservation Bureau of Indian Affairs
Air Pollution	Clean Air Act Washington Clean Air Act	U.S. Environmental Protection Agency Benton-Franklin Air Pollution Control Authority Washington Department of Health Ecology
Facility Safety	42 USC 2286	Defense Nuclear Facility Safety Board
Water Resources Hanford Reach Study Water Pollution Control	Wild and Scenic Rivers Act Hanford Reach Study Act Water Pollution Control Act	National Park Service Ecology U.S. Environmental Protection Agency
Floodplains and Wetlands	Floodplain and Wetlands Regulations	U.S. Army Corps of Engineers
Hazardous, Dangerous, and Mixed Waste Management and Transportation	Resource Conservation and Recovery Act Hazardous and Solid Waste Amendments Comprehensive Environmental Response, Compensation, and Liability Act	U.S. Environmental Protection Agency Ecology Oregon Department of Energy Washington Department of Transportation Natural Resources Trustee Council
Radioactive Waste Management and Disposal	Atomic Energy Act	Nuclear Regulatory Commission
Tribal Concerns	Reserved Treaty Rights DOE Policy	Confederated Tribes and Bands of the Yakama Indian Nation Confederated Tribes of the Umatilla Indian Reservation Nez Perce Tribe Federal Government Ecology
Socioeconomics and Planning	National Environmental Policy Act	Benton and Franklin Counties and Municipal Agencies for Richland, Kennewick and Pasco (Planning and Economic Development)
Environmental Justice	Executive Order 12898	Department of Energy Ecology Confederated Tribes and Bands of the Yakama Indian Nation Confederated Tribes of the Umatilla Indian Reservation Nez Perce Tribe Wanapum People Minority Communities Low-Income Communities

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6.0 REFERENCES

Atomic Energy Act, 42 USC 2011 et seq., 1954, as amended.

Council on Environmental Quality, Code of Federal Regulations 40 CFR 1500-1508, "Regulations Implementing the Procedural Provisions of the National Environmental Policy Act."

Department of Energy, 1992, Code of Federal Regulations 10 CFR 1021, "National Environmental Policy Act Implementing Procedures".

Department of Energy, 1994, Hanford Federal Facility Agreement Consent Order, Fourth Amendment, U.S. Department of Energy, Washington State Department of Ecology, U.S. Environmental Protection Agency, Richland, Washington, 89-10 Rev. 3, January 1994.

Department of Energy, May 1994, Environmental Assessment, "Return of Isotope Capsules to the Waste Encapsulation and Storage Facility, Hanford Site, Richland, Washington" (DOE/EA-0942).

Department of Energy, July 1994, Safe Interim Storage of Hanford Tank Waste Draft Environmental Impact Statement (DOE/EIS-0212).

Department of Energy, 1983, Defense Waste Management Plan.

National Environmental Policy Act Public Law 91-109, 42 USC 4321 et seq., January 1, 1970, as amended.

Revised Code of Washington, State Environmental Policy Act 43.21C, Washington State Environmental Policy Act Rules, Washington Administrative Code 197-11.

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APPENDIX A
Memorandum of Understanding

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MEMORANDUM OF UNDERSTANDING (MOU)

BETWEEN

UNITED STATES DEPARTMENT OF ENERGY,
RICHLAND OPERATIONS OFFICE

AND

STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY

I. INTRODUCTION

The U.S. Department of Energy, Richland Operations Office (hereinafter referred to as RL) is proposing to retrieve, treat, immobilize and dispose or store Hanford's high-level tank waste and encapsulated strontium and cesium to reduce the overall potential risks posed by the wastes. The Tank Waste Remediation System (TWRS) program has been established by RL for the purpose of managing the proposed action.

The proposed TWRS actions are subject to both the National Environmental Policy Act (NEPA) and the Washington State Environmental Policy Act (SEPA) which require consideration of the potential environmental impacts in the decision making process. It is appropriate that joint environmental documentation be prepared for TWRS actions to address and fulfill the requirements of both NEPA and SEPA. The joint effort is expected to streamline the environmental impact review process and avoid unnecessary duplication, delay and costs. It is in this spirit that RL and the Washington State Department of Ecology (hereinafter referred to as Ecology) agree to prepare joint NEPA/SEPA environmental documentation for actions determined to require an Environmental Impact Statement (EIS).

The joint NEPA/SEPA environmental documentation (hereinafter referred to as an EIS) will be prepared to fulfill the EIS requirements of all applicable federal and state laws, executive orders, rules, and policies. In particular, it will comply with the EIS requirements of the National Environmental Policy Act of 1969 (NEPA) and the State Environmental Policy Act (SEPA).

Presently, RL and Ecology intend to jointly prepare a TWRS EIS to encompass all TWRS activities that are ready for decision. In addition, RL and Ecology will jointly prepare an EIS for the construction and operation of six new

double-shell storage tanks as an interim action while the TWRS EIS is being prepared.

II. PURPOSE

The purpose of this Memorandum of Understanding (MOU) is to help coordinate the preparation of EISs for the Tank Waste Remediation System (TWRS) through the cooperation of the RL and Ecology. It sets forth obligations to be met and procedures to be followed by the parties. The objective of this MOU is to establish procedures that will assist the cooperating parties in producing EISs that meet the requirements of both NEPA and SEPA during the environmental analysis process while minimizing the amount of paperwork, duplication, and delay.

III. AUTHORITIES

A. This MOU is authorized by PL 95.91, the U.S. Department of Energy Organization Act.

B. This MOU has been developed in accordance with DOE Order 1280.1, Memorandum of Understanding.

C. The authorities which shall be followed in preparing the EIS documents covered by this MOU include, but are not limited to:

1) The National Environmental Policy Act of 1969, as amended.
2) Council on Environmental Quality, Regulations for Implementing the Procedural Provisions of the NEPA, 40 CFR 1500-1508.
3) Department of Energy, NEPA Implementing Procedures, 10 CFR 1021.
4) DOE Order 5440.1E, NEPA Compliance Program.
5) State of Washington, State Environmental Policy Act (SEPA), Chapter 43.21C RCW.
6) SEPA Rules, Chapter 197-11 WAC.
7) Hanford Federal Facilities Agreement and Consent Order (Tri-Party Agreement).

IV. DEFINITIONS

A. "Process" means jointly the NEPA process and the SEPA process.

B. "PDEIS" means Preliminary Draft Environmental Impact Statement: "DEIS" means the Draft Environmental Impact Statement: "FEIS" means the Final Environmental Impact Statement.

C. "DOE" means U.S. Department of Energy: "RL" means U.S. Department of Energy, Richland Field Office.

D. "Ecology" means Washington State Department of Ecology.

E. "Lead Agencies" means the joint lead federal and state agencies, which are RL and Ecology. These parties will have the final responsibility to insure that the Process is adequately performed. In addition, they will cooperate, coordinate, provide expertise and technical review, and consolidate procedures to establish efficiency on the Process.

F. "Agency" means RL or Ecology.

G. "TPA" means the Hanford Federal Facilities Agreement and Consent Order (Tri-Party Agreement).

V. GENERAL OBLIGATIONS OF THE LEAD AGENCIES

A. Active and timely participation in all appropriate phases of the process.

B. Establish a mutually acceptable time schedule for the process which meets both NEPA and SEPA requirements and allows appropriate review times for the agencies involved and effective citizen involvement.

C. Provide for meetings with appropriate Federal, State, Regional, and local agencies, and concerned groups for the purpose of increasing communication and receiving comments on the proposed action project and related environmental documents.

D. In all instances involving questions as to the content, accuracy or relevance of any material (including all issues, data, analyses, and conclusions) in an EIS, the Lead Agencies shall make the final determination on the inclusion, deletion or revision of the material, and shall have the ultimate responsibility for assuring compliance with the requirements of NEPA and SEPA.

E. The RL shall be responsible for ensuring compliance with all requirements of NEPA and Council on Environmental Quality regulations, as well as other Federal regulations and laws. Ecology shall be responsible for ensuring compliance with all requirements of SEPA and other Washington State authorities, as they relate to the preparation of an EIS. The Lead Agencies shall ensure that all relevant environmental issues, reasonable alternatives, and environmental impacts are addressed in the EIS and shall be responsible for their scope and content.

F. Expedite the process by consolidating meetings, mandatory processes, and documents whenever practicable.

G. Have their respective authorized representatives or suitable alternates attend regular meetings. Attend other meetings when any particular party's attendance is necessary to provide issue clarifications, expertise, or in response to a public demand.

H. Make available all general and specific information that will be needed to complete the process.

I. The Lead Agencies will make every effort to comply with the schedule to be established in the Implementation Plans (IPs).

J. The data provided pursuant to this agreement may contain non-public information or proprietary data and information derived therefrom. Each party agrees to honor and provide appropriate protection to materials identified as draft, proprietary, or containing other restrictive legends and to limit the use and dissemination of such documents to agency employees involved in preparing the EISs. The Lead Agencies agree to maintain confidentiality of the non-public information to the extent authorized by the law. If a request for public disclosure is received, a determination, as mandated by appropriate federal and/or state laws, will be made by agency to whom the request is directed.

K. Any challenge to the decisions made in the FEIS and the joint decision document will be the responsibility of the agency whose decision is being challenged. The parties agree to assist in providing to each other information that may be necessary to respond to such challenges.

L. For incidental out-of-state travel costs related to the EISs, not obtainable under the funding mechanisms set forth in TPA, RL will provide written authorizations prior to any invitational travel. In addition, the following conditions will apply:

1. Travel is for business meetings directly related to the development and review of the EISs.

2. Ecology has agreed to limit travel, number of travellers, and costs.

3. Federal Travel Regulations (FTR) will apply for cost reimbursements to the employees.

4. RL will provide written authorizations prior to any invitational travel.

M. Performance of the Process does not relieve RL or Ecology from performance of their obligations under the Tri-Party Agreement (TPA). However, if decision(s) resulting from environmental analyses require reconsideration of the TPA commitments, the Lead Agencies will consider and take appropriate actions to revise TPA milestones, interim TPA milestone activities, or interim TPA requirements consistent with the completion of all tank waste processing by the year 2028.

VI. PROCEDURES

Each agency will designate a Technical Coordinator to manage the following activities related to the EISs:

A. The Lead Agencies will jointly conduct scoping, including meetings, with the public. Scoping will be done to determine the reasonable alternatives and areas of public and agency concern pertaining to the proposed action..

B. The Lead Agencies will prepare draft Implementation Plans and review and agree on the contents and schedule to be contained in the plans. The purpose of these plans is to guide the preparation of the EISs and propose the scheduling, organization, and contents of the documents. These plans will include: the scopes of the EISs as determined during the scoping process, name of potential sub-contractors and consultants, and a proposed timeline for the process.

C. Upon completion of the scoping, including public scoping meetings, the Lead Agencies will finalize and adopt the Implementation Plans (IPs). The plans will highlight the primary issues, the list of environmental elements and alternatives that will be addressed in the environmental consequences section of the EISs, and other identified issues and additional information obtained during the scoping process. The IPs will be made available to the public and may be modified as required or authorized by Federal or State law.

D. The RL shall have the primary responsibility for writing or rewriting all sections, parts, or chapters of the EISs subject to review and revision by Ecology. The rewriting will be consistent with the overall time schedule and content commitments set forth in the Implementation Plan.

E. The RL will provide Ecology with sections of the PDEISs for review and recommendations for the necessary revisions. The Lead Agencies will convene DEIS workshops, as necessary, for the purpose of reviewing and revising the DEISs (or portions thereof) and for addressing and resolving issues which may arise. The comment and issue resolution process is defined in Section VII of this MOU. The RL shall incorporate the agreed comments and changes into the sections, parts, or chapters of the PDEISs. The RL and Ecology shall have the final authority to determine the final text of the DEISs. Upon acceptance and approval of

the PDEISs by Lead Agencies, they shall issue in accordance with their respective organization's NEPA/SEPA procedures, guidelines, requirements, and policies the DEISs to the public, and Federal, State, and local agencies for review and comment. Should the parties be unable to agree upon the appropriate text of the DEIS or FEIS each agency may issue its own EIS documents. Printing of the DEISs shall be the responsibility of the RL. The Lead Agencies shall be responsible for issuing and distributing the DEISs.

F. Upon completion of the DEISs, the Lead Agencies will be responsible for organizing and conducting the required and/or agreed public meetings. The RL will be responsible for filing the DEISs with the Environmental Protection Agency (EPA) in accordance with the DOE NEPA procedures, guidelines, requirements, and policies. Ecology will assure compliance with the rules of Chapter 197-11 WAC and will be responsible for publishing the notices of the DEISs on the SEPA register. Lead agencies will receive all comments on the DEISs resulting from the review and comment period. A public comment period of no less than 45 days, unless otherwise designated by appropriate authority, will be initiated when EPA publishes the "Notice of Availability" in the Federal Register.

G. After the close of the DEIS review and comment periods, Lead Agencies will assess and consider comments submitted by the public, Federal, State, and local agencies and determine how they will be addressed. The Lead Agencies will jointly determine any necessary modifications of the FEISs text. These modifications shall be incorporated in the FEISs by the RL in a timely manner. The RL and Ecology shall have final authority to determine the final text of the FEISs. Disagreements between agencies will be resolved in accordance with the procedures defined in Section VII of this MOU.

H. Upon acceptance and approval of the FEISs by the Lead Agencies, they shall in accordance with their respective organization's NEPA/SEPA procedures, guidelines, requirements, and policies jointly authorize the release of the FEISs to the public, and Federal, State, and local agencies.

I. Ecology will publish the availability of the FEISs in the SEPA Register. The RL will be responsible for filing the FEISs with the EPA in accordance with the DOE NEPA procedures, guidelines, requirements, and policies. Printing of the FEISs shall be the responsibility of the RL.

J. Following the "Notice of Availability" for the FEISs, the Lead Agencies shall prepare joint decision document(s) and on approval shall jointly authorize their release in accordance federal and state laws, executive orders, rules, and policies.

K. The RL may by agreement designate Ecology to draft sections of the EISs. Such sections will be negotiated between the Lead Agencies and will be so stated in the IPs. As appropriate, RL and Ecology will provide such prepared materials in a timely manner sufficient to ensure their integration into the EISs.

VII. COMMENT AND ISSUE RESOLUTION PROCESS

The Lead Agencies shall adopt a resolution process to achieve closure on issues arising from: 1) public scoping meetings, hearings, and correspondence; and 2) technical preparation of the joint environmental documentation.

A. Public Comments shall be categorized by subject for ease of review and consistency in response. Responses will be jointly prepared for each comment category. The RL will generally be responsible for the categorization of comments and initial preparation of proposed responses. However, Ecology will be responsible for the preparation of proposed responses pertaining to the "State Only" (e.g. SEPA) issues.

B. Technical Preparation of the EISs will receive editorial and technical comments from the authors and reviewers representing both the RL and Ecology.

C. Editorial Comments will be dispositioned by the interagency technical document preparation team.

D. Review Comments will be maintained in a log of all formal review comments and their disposition by the interagency technical team. The designated technical coordinators shall be empowered by the Lead Agencies to review and approve the disposition of all documented comments other than those of an editorial nature.

E. Issue Resolution for disputed issues will be resolved in accordance with federal and state laws and by convening an Issue Resolution Board (IRB) consisting of each agency's: 1) TWRS Program Manager, 2) TWRS Technical Coordinator, and 3) TPA Project Manager. The IRB's decision(s) will be incorporated in the Process. TPA dispute resolutions will not be used to resolve issues ensuing from the Process.

VIII. TERMINATION

A. Any party to this MOU may terminate the MOU upon 30 days written notice to the other party. During the 30 day period, the parties will actively attempt to resolve any disagreements.

B. In the event of termination of the MOU and if the preparation of an EIS is still required, RL and Ecology shall have access to all documentation, reports, analysis, and data developed necessary for preparation of an EIS by that agency. Such access shall be subject to the non-disclosure requirements set forth in section V.

C. This MOU will terminate following completion of the NEPA/SEPA process for the TWRS Project.

IX. SECURITY

Should any documents be subject to national security requirements pursuant to the Atomic Energy Act 1954 as amended, the access by Ecology participants to such documents shall be subject to all applicable security requirements of the DOE.

X. MODIFICATION

This MOU may be modified by the parties hereto by mutually agreed upon written amendment.

XI. MISCELLANEOUS

The parties to this agreement will comply with all applicable state and federal law. If any provision of this agreement violates the law, the provision will be void, but the remainder of the agreement will continue to be effective; and binding on the parties.

for John D. Wagoner, Manager
Richland Operations Office,
U.S. Department of Energy
Date: 2-15-94

Orusilla Butler, Manager
Nuclear Mixed Waste Management Program,
Washington State Department of Ecology
Date: 2-15-94

APPENDIX B
Notice of Intent

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evaluating activities involving all spent nuclear fuel at the Idaho National Engineering Laboratory.

On June 28, 1993, the Federal District Court in Idaho granted the State of Idaho's request for an injunction and directed DOE to evaluate "The direct and indirect environmental effects of all major federal actions involving the transportation, receipt, processing, and storage of spent nuclear fuel at the Idaho National Engineering Laboratory." Furthermore, the Court Order directed DOE to consider the alternative of "transporting, receiving, processing, and storing spent nuclear fuel at sites other than the [Idaho] National Engineering Laboratory."

The DOE is separately preparing an Environmental Impact Statement on spent nuclear fuel management throughout the DOE, which includes Naval spent fuel. The Navy is a cooperating agency in this effort. The DOE Environmental Impact Statement will evaluate alternatives for managing Naval spent fuel from 1995 through 2035, and will consider Naval Shipyards and other sites for this purpose. A previous Federal Register announcement provides further information (Vol. 58, No. 170, page 46951). The DOE Environmental Impact Statement is scheduled to be published in April 1995 with a Record of Decision by June 1, 1995.

Preferred Alternative

If no action were taken, loaded Naval spent fuel shipping containers would accumulate at five shipyards: Portsmouth Naval Shipyard in Kittery, Maine; Norfolk Naval Shipyard in Portsmouth, Virginia; Newport News Shipbuilding in Newport News, Virginia; Puget Sound Naval Shipyard in Bremerton, Washington; and Pearl Harbor Naval Shipyard in Pearl Harbor, Hawaii. Naval spent fuel also would remain in the Surface Ship Support Barge at Newport News Shipbuilding. The No Action alternative, which is the preferred alternative, would allow all shipyard work, including refueling and defueling of nuclear powered ships, to continue unimpeded by the short-term accumulation of Naval spent fuel.

Consolidation Alternative

Under the Consolidation alternative, Naval spent nuclear fuel in shipping containers would be consolidated at Norfolk Naval Shipyard on the east coast and at Puget Sound Naval Shipyard for the Pacific Ocean shipyards. The Surface Ship Support Barge would remain in use at Newport News Shipbuilding. All other shipyard work, including refueling and defueling of nuclear powered ships, would continue unimpeded under the Consolidation alternative. However, this alternative offers no operational advantages to the Navy compared to the No Action alternative, and it would entail otherwise unnecessary shipping of naval spent fuel.

Moored Ship Alternative

Under the Moored Ship alternative, nuclear powered ship inactivations would be deferred. The nuclear propulsion plants would be taken to a cold shutdown condition and physically modified to prevent reactor operation, such as by eliminating the capability to withdraw control rods. Only the ship systems necessary to support eventual defueling would be maintained. The ship would be tied up at a pier within the controlled industrial area of the shipyard where it was scheduled to be defueled. Reduced crews would provide surveillance and necessary maintenance of the ships.

The Moored Ship alternative has operational disadvantages compared to the No Action and Consolidation alternatives. It would disrupt shipyard work schedules, idle skilled shipyard defueling and inactivation workers, and utilize highly trained Navy nuclear ship operators in the unproductive task of watching over shut down ships.

Other Alternatives

There are no other alternatives for short-term storage of Naval spent fuel which could be implemented within the time frame under consideration. Alternatives which were considered but found to be impractical for short-term storage included (1) shipment to Idaho as in the past, which is precluded by the Federal District Court injunction; (2) storage in commercial dry storage casks, which could not be procured and adapted quickly for use with Naval fuel; and (3) storage in Navy or DOE water pools, which is precluded in the short-term by space limitations and lack of the necessary storage racks.

Environmental Considerations

The impacts of the three alternatives have been evaluated both in terms of their specific impacts and the cumulative impacts of shipyard operation. Since the radioactivity in the spent fuel is totally isolated from the environment in either the shipping containers, the Surface Ship Support Barge, or in shutdown ships, short-term storage under any of these alternatives would not result in any additional release of radioactivity under normal conditions.

The Environmental Assessment considers several hypothetical accidents involving Naval spent fuel including release of radioactivity from the fuel during the accident. To summarize, all of the overall accident risks are very small, less than one chance in 10,000 of a single fatal cancer in the entire population. While the numerical results of the calculations differ for the various storage modes and locations, the overall risks are so small that accident risks provide no realistic basis for selecting among the alternatives.

Proposed Determination

Based on the information and analysis in the Environmental Assessment, the Naval Nuclear Propulsion Program considers the No Action alternative not to constitute a major Federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act. Therefore, the Naval Nuclear Propulsion Program issues this Finding of No Significant Impact and will make a final determination following a 30 day public review period.

Dated: January 14, 1994.

B. DeMars,

Admiral, U.S. Navy, Director, Naval Nuclear Propulsion Program.

Dated: January 20, 1994.

Michael P. Rummel,

LCDR, JAGC, USN, Federal Register Liaison Officer.

[FR Doc. 94-1914 Filed 1-27-94; 8:45 am]

BILLING CODE 3810-AE-M

DEPARTMENT OF ENERGY

Intent To Prepare Hanford Tank Waste Remediation System Environmental Impact Statements, Richland, WA

AGENCY: Department of Energy.

ACTION: Notice of Intent (NOI) to prepare two Environmental Impact Statements (EISs) for proposed actions at the Hanford Site, Richland, Washington. One EIS will address the proposed Tank Waste Remediation System (TWRS) activities, and the second will address the proposed construction of six new tanks for the storage of high-level radioactive waste as an interim action to the TWRS EIS.

SUMMARY: The U.S. Department of Energy (DOE) announces its intent to prepare two EISs pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 *et seq.*), in accordance with the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 CFR

parts 1500–1508) and the DOE implementing procedures (10 CFR part 1021), and to conduct a series of public scoping meetings. It is intended that the TWRS EIS cover all TWRS activities that are ripe for decision. In addition, DOE proposes to prepare an EIS for the construction and operation of six new storage tanks as an interim action while the TWRS EIS is being prepared, consistent with the provisions of 40 CFR 1506.1. The public scoping period being announced in this NOI provides an opportunity for the public to comment on the scope of issues to be addressed in both the TWRS EIS and the new tanks EIS.

The TWRS program is conducted in concert with the Hanford Federal Facility Agreement and Consent Order (also called the Tri-Party Agreement or TPA) among DOE, the U.S. Environmental Protection Agency (EPA) and the Washington State Department of Ecology (Ecology). The scope of the TWRS Program includes: Resolution of high-level radioactive waste tank safety issues; management of high-level waste tank farm operations; upgrading the tank farm infrastructure; waste characterization; storage of wastes generated from Hanford cleanup activities; tank farm waste retrieval, conditioning (e.g., evaporation/dilution), pretreatment (e.g., radionuclide separation), and immobilization (e.g., vitrification); construction of new high-level waste tanks; storage of immobilized high-activity waste; storage/disposal of immobilized low-activity waste; management of encapsulated strontium and cesium; and technology development.

DOE has identified the immediate need for additional interim high-level waste storage capacity to support the resolution of safety issues associated with "Watchlist" tanks as identified pursuant to "Safety Measures for Waste Tanks at Hanford Nuclear Reservation," section 3137 of the National Defense Authorization Act for Fiscal Year 1991, P.L. 101–510. As an interim action to the TWRS EIS, the new tanks EIS will address the proposed construction and operation of six new underground storage tanks to support the resolution of safety issues concerning the high-level waste in existing tanks.

In March 1993, DOE completed a rebaselining of the TWRS program to ensure that the program to remediate Hanford tank wastes is comprehensive, integrated and technically sound. Subsequently, the TPA was renegotiated and revised. Public meetings on the revised TPA were held in several locations statewide during November 1993. The revised TPA is expected to be signed by all parties on January 25, 1994.

The proposed TWRS program actions constitute a major Federal action significantly affecting the environment and, accordingly, DOE has developed a strategy for providing the appropriate NEPA reviews for the actions. The strategy consists of a TWRS EIS for the overall proposed action to treat, store, and dispose of Hanford's stored high-level tank waste, and an EIS for the new tanks as an interim action. In addition, separate NEPA reviews for other interim actions may need to be initiated during preparation of the TWRS EIS and the new tanks EIS. Such interim actions would include activities needed to maintain the current waste management system; collect data and resolve urgent pretreatment issues; and protect both the workers, the public and the environment. The TWRS EIS will address the cumulative impacts of the TWRS program including the new tanks and other interim actions.

In December 1987 the DOE completed the "Final Environmental Impact Statement on the Disposal of Hanford Defense High-Level, Transuranic and Tank Wastes" (HDW EIS), which addressed the environmental consequences of alternatives for disposal of wastes generated during national defense activities and stored at the Hanford site. A Record of Decision (ROD) issued in April 1988 has formed the basis for DOE's programs to manage these wastes at the Hanford site.

In the HDW EIS ROD, DOE deferred final disposal decisions for the tank wastes contained in single-shell tanks (SSTs), pending further evaluations in a supplemental EIS. However, to meet regulatory requirements, DOE's current planning basis is to retrieve SST waste, and to integrate double-shell tank (DST) and SST waste management activities leading to final disposal. Because DOE now proposes to integrate SST and DST waste management programs, the TWRS EIS described in this NOI will replace the previously planned supplement to the HDW EIS.

The TWRS EIS will address the DOE's proposal for the management, treatment, storage, and disposal of the waste currently stored in the existing 149 SSTs and 28 DSTs and other wastes to be generated during future decontamination and decommissioning activities at Hanford. DOE recognizes that removal of waste from the tanks may trigger Resource Conservation and Recovery Act (RCRA) treatment and disposal requirements to complete closure of the tanks. However, the impacts of tank closure cannot be meaningfully evaluated at this time. DOE will conduct an appropriate NEPA review, such as an EIS to support tank closure, in the future.

The planned interim action EIS will address the construction of six new tanks and associated new transfer lines, and the tank operations. For the purposes of this interim action EIS, operations considered would be limited to the retrieval, pH adjustment or alkalinity control, and storage of wastes from the Watchlist safety tanks. The primary focus of the EIS would be the resolution of safety issues related to the three tanks that are on the Watchlist because of hydrogen generation (241–SY–101, 241–SY–103 and 241–AN–104), but the tanks may also be used to alleviate safety concerns in other Watchlist tanks (50 tanks are currently on the Watchlist). Further decisions regarding the retrieval, treatment and disposal of wastes from the Watchlist tanks will be the subject of the TWRS EIS.

DATES: DOE invites all interested parties to submit written comments or suggestions concerning the scope of the issues to be addressed, alternatives to be analyzed, and the environmental impacts to be assessed in the TWRS EIS and the new tanks EIS, during a 45-day comment period ending March 14, 1994. The public is also invited to attend scoping meetings in which oral comments will be received on the proposed TWRS EIS and the new tanks EIS. Oral and written comments will be considered equally in preparation of the EISs. Written comments must be postmarked by March 14, 1994. Comments postmarked after that date will be considered to the extent practicable. Oral and written comments will be received at public scoping meetings to be held on the dates and at the locations given below:

Richland, Washington	February 14, 1994	Hanford House—Red Lion 802 George Washington Way, Richland, WA 99352
Hood River, Oregon	February 16, 1994	The Hood River Inn/Best Western 1108 East Marina Way Hood River, OR 97031.

Portland, Oregon	February 17, 1994	Bonneville Power Administration Auditorium, 911 N.E. 11th Avenue Portland, OR 97204.
Seattle, Washington	February 22, 1994	The Mountaineer's 300 Third Ave. West Seattle, WA 98105.
Spokane, Washington	February 24, 1994	Spokane Convention Center 334 West Spokane Falls Blvd. Spokane, WA 99201.

Each scoping session will begin with a welcome and introduction of DOE officials, followed by short presentations by DOE officials on the EIS process, the Hanford TWRS program and the proposed interim actions. Individuals and organization spokespersons will then have an opportunity to present oral comments to DOE representatives. The agenda will be repeated twice a day at each location, in afternoon and evening sessions. The hours for the sessions are: 1 pm to 4:30 pm and 6:30 pm to 10 pm.

Requests to speak at these meetings may be made by calling the toll-free telephone number, 1–800–500–1660, by 3 p.m. the day before the meeting or by writing to Donald Alexander (see ADDRESSES, below).

The meetings will be chaired by a presiding officer but will not be conducted as evidentiary hearings; speakers will not be cross-examined although the presiding officer and DOE representatives present may ask clarifying questions. Individuals requesting to speak on behalf of an organization must identify the organization. A 5-minute limit will be imposed on each individual speaker except that a speaker representing an organization (one per organization) will be given a 10-minute limit. These limits are to ensure that all who wish to speak have an opportunity to do so. Comments will be recorded by a court reporter and will become part of the scoping meeting record.

Persons who have not submitted a request to speak in advance of the scoping meetings may register at the meetings and will be called on to speak on a first-come first-served basis as time permits. Written comments will also be accepted at the meetings, and speakers are encouraged to provide written versions of their oral comments for the record.

DOE will review scoping comments to determine their applicability to the two proposed EISs. Records of, and responses to, the scoping comments will be provided as appropriate in either the Implementation Plan (IP) for the TWRS EIS or the IP for the new tanks EIS. The IPs will provide guidance for preparation of the TWRS and new tanks EISs and establish their scopes and content (10 CFR 1021.312). The IPs will be issued prior to the release of the draft EISs and copies will be available for inspection in public reading room locations to be announced.

ADDRESSES: Written comments on the scope of the TWRS EIS and the new tanks EIS, questions concerning the tank waste program, requests for speaking times, and requests for copies of the IPs and/or the Draft EISs (DEISs) should be directed to the designated contact below. If any additional DEISs are prepared for other interim actions, their availability will be announced in the Federal Register and opportunity will be provided for public review and comment as required by CEQ and DOE regulations. Any interim action DEISs may also be obtained from the designated contact below.

FOR FURTHER INFORMATION CONTACT: Donald H. Alexander, Attn: Scoping Comments, U.S. Department of Energy, Post Office Box 550, Richland, WA 99352, Telephone: 509–372–2453 or 1–800–500–1660.

For information on the DOE NEPA process, contact: Carol M. Borgstrom, Director, Office of NEPA Oversight (EH–25), U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, DC 20585, Telephone: 202–586–4600 or leave a message at 1–800–472–2756.

SUPPLEMENTARY INFORMATION:

Background

The Federal government created the Hanford Site, near Richland, Washington, in 1943, as part of the Manhattan Project, to produce plutonium for national defense. Metallic uranium fuel was irradiated in nuclear reactors and then the fuel was chemically processed to recover plutonium. Plutonium production at the Hanford Site stopped in 1988.

Processing of reactor fuel and other waste management activities created a wide variety of radioactive wastes, including high-level wastes that have been stored in underground tanks. The high-level wastes came from many different processes and sources, and they have been processed and transferred among tanks so that chemical and physical characteristics of the wastes vary greatly among tanks and even within individual tanks. Typically, the tank wastes are highly radioactive and chemically hazardous.

SSTs have one steel wall, surrounded by reinforced concrete; they were constructed between 1944 and 1964 and received waste until 1980. The capacity of most SSTs is 0.5 million gallons (Mgal) to 1.0 Mgal. The tanks are situated below grade and are covered with 6 to 10 feet of earth.

Waste in SSTs consists of liquids, sludges, and saltcake, i.e., crusty solids made of crystallized salts. Some of the liquids in the SSTs are contained in the pores of the sludges and saltcake, and some liquids are free standing in the tanks.

There are 149 SSTs storing about 36 Mgal of waste. This waste is comprised of approximately 0.6 Mgal of free-standing liquid, 23.2 Mgal of saltcake, and 12.5 Mgal of sludge. About half of the SSTs have leaked or are assumed to have leaked. Approximately 0.6 to 0.9 Mgal of waste has leaked or spilled into the nearby soil. Over the years, much of the liquid stored in SSTs has evaporated or been pumped to DSTs.

There are 28 one Mgal DSTs at Hanford. The DSTs were constructed between 1970 and 1986. Most of these tanks are designed for up to 50 years of storage. DSTs have a second steel containment wall. The space between the two walls is monitored for leaks. DOE has used the DSTs since 1970 and none has been known to leak. The DSTs are used to treat and store a variety of liquid radioactive wastes from the SSTs and from various Hanford Site processes. The wastes are stored in tanks based upon composition, level of radioactivity, or origin. The DSTs now contain about 25 Mgal of waste.

In the 1960s and 1970s, radioactive strontium and cesium were extracted from wastes in some SSTs. The strontium and cesium were converted to salt forms and placed in double-walled capsules. Most of the 610 strontium capsules and 1323 cesium capsules are stored at Hanford. Some capsules were shipped offsite for beneficial use as heat or radiation sources. Because the capsules were only leased from DOE, it is anticipated that they will be returned to Hanford.

In the April 1988 HDW EIS ROD, DOE decided to proceed with preparing the DST waste for final disposal because it

was readily retrievable. Wastes were to be processed in a pretreatment facility (planned to be the Hanford B-Plant and AR Vault) to separate DST waste into two portions. The larger portion would be low activity waste, and a much smaller portion would be highly radioactive. The low activity waste was to be mixed with a cement-like material to form grout. The grout was to be poured into large, lined, concrete, near-surface, underground vaults where it would solidify.

The high activity waste fraction was to be made into a borosilicate glass and poured into stainless-steel canisters (approximately 0.6 m diameter by 3 m long) at the proposed Hanford Waste Vitrification Plant (HWVP). The canisters were to be stored there until a geologic repository was ready to receive this waste.

Existing and future DST wastes were to be characterized for hazardous chemical constituents as well as other constituents that might affect glass or grout formulations before processing. This characterization would also help ensure that proper treatment, in accordance with hazardous waste regulations, occurred before disposal of the waste.

The HDW EIS ROD also called for storage of cesium and strontium capsules to continue until a geologic repository is ready to receive this waste for disposal. Before shipment to the repository, the capsules would be packaged to meet repository acceptance criteria.

In the HDW EIS ROD, DOE decided to conduct additional development and evaluation before making decisions on final disposal of SST wastes. This development and evaluation effort was to focus both on methods to retrieve and process SST wastes for disposal and to stabilize and isolate the wastes near-surface. SST waste would continue to be stored and monitored. Before a decision on the final disposal of the wastes could be made, the alternatives were to be analyzed in a supplement to the HDW EIS.

Several significant changes have occurred subsequent to the HDW EIS. These include the identification of significant waste tank safety issues; the DOE, EPA and Ecology signing the TPA; the elimination of B-Plant from consideration as a waste pretreatment facility; the delay of the HWVP; and the proposal to treat SST waste with DST waste. These changes resulted in DOE's proposal to integrate all Hanford tank waste remediation efforts. As a result, resolving waste tank safety issues, planning for SST waste retrieval, and developing pretreatment facilities have become major elements of the proposed Hanford tank waste remediation program.

Purpose and Need for Agency ACTION:

DOE needs to take action to treat, store, and dispose of Hanford's stored high-level tank waste and encapsulated strontium and cesium and to reduce the overall potential risks posed by the tank wastes. This entails addressing four major programmatic elements: Retrieval, pretreatment, immobilization, and storage/disposal. More specifically, these programmatic elements include:

- Retrieval of SST and DST wastes.
- Conditioning (e.g., evaporation/dilution) of wastes.
- Waste pretreatment.
- New infrastructure such as facilities, tanks, and transfer lines.
- Production of a stabilized high-activity waste form.
- Interim storage for the stabilized high-activity waste form.
- Production and disposal of a stabilized low-activity waste form.
- Management of encapsulated strontium and cesium inventory.

DOE also needs to address closure of tanks (including disposal of tanks, piping, ancillary facilities, and contaminated soil). Although tank closure is included in the TPA, closure is not included in the proposed action for the TWRS EIS because the impacts of tank closure cannot be meaningfully evaluated at this time. DOE will conduct an appropriate NEPA review, such as preparing a tank closure EIS, in the future.

TWRS EIS Alternatives

A number of alternatives can be constructed from the range of options available for the four major subcomponents of the TWRS, which are retrieval, pretreatment, immobilization and storage/disposal. Combinations of these options comprise the range of reasonable alternatives currently envisioned for TWRS. The TPA establishes one specific case within the range of alternatives to be considered in the TWRS EIS. The TWRS EIS will also evaluate a number of other alternatives constructed from the range of options described for the four major subcomponents of the TWRS and a no-action alternative in order to adequately evaluate the full range of potential environmental impacts.

TPA Preferred Alternative

On March 31, 1993, DOE, EPA, and Ecology agreed to enter into formal negotiations on matters relating to Hanford tank waste remediation, environmental restoration activities, cost control, and implementation and administration of the Hanford Federal Facility Agreement and Consent Order. The negotiations were concluded in September 1993, with tentative agreement on all matters under negotiation. The revised TPA received public review during November 1993, and the TPA was scheduled to be signed by the three parties on January 25, 1994. The full TPA covers subjects outside the purview of the TWRS program. The elements of the TPA which are within the scope of the TWRS program constitute elements of the preferred alternative for purposes of the TWRS EIS. Accordingly, the TPA preferred alternative consists of the following activities:

- Upgrading the infrastructure of the high-level waste tank farms to provide improved facility management and operation.
- Characterization of the wastes in all 177 SSTs and DSTs to facilitate treatment, immobilization and disposal.
- Construction and operation of additional DSTs (beyond the six tanks proposed in the interim action EIS noticed here) as necessary to support waste management and disposal.
- Stabilization of SST waste by removing and storing the pumpable liquids in DSTs, thus reducing the potential for leaks to the surrounding soil.
- Retrieval of the waste from SSTs and DSTs with priority on the SSTs. The retrieval criterion is removal of 99% of the waste from all SSTs on a tank-by-tank basis.
- Construction and operation of a waste pretreatment facility to treat the tank waste and to prepare the low-activity fraction for final processing. The high-activity fraction of the waste would be stored pending final processing. Separate complexes would be constructed to house enhanced sludge washing and cesium and strontium ion exchange processes. An evaporator would be included in the low-activity waste pretreatment complex. These complexes could be stand-alone facilities, a set of distributed facilities, or part of a central processing complex.
- Construction and operation of a low-activity waste vitrification plant of appropriate capacity. Bounding analysis may be used if definitive designs are not available. DOE would maintain in a standby condition the capability to restart the grout facility if its operation is necessary before new DSTs are available to provide tank space to resolve safety issues.

• Storage/disposal of the vitrified low-activity waste on-site at Hanford.
• Construction and operation of a high-activity waste vitrification plant of appropriate capacity. Bounding analysis may be used if definitive designs are not available.
• Construction and operation of storage for vitrified high-activity waste until a repository for permanent disposal is available.
• Existing cesium and strontium capsules would be either over-packed and stored, or dissolved and blended with the high-activity vitrification waste stream.

Additional Alternatives

Additional alternatives will be constructed from the range of options described below in order to adequately evaluate the full range of potential environmental impacts.

Options for Retrieval

Waste can be retrieved by hydraulic sluicing, pneumatic or mechanical systems. Hydraulic sluicing injects liquid into the tank to dislodge and mobilize or dissolve the waste. Pumps transfer the liquid and slurry out of the tank. Mechanical or pneumatic systems are placed in contact with the waste. This equipment conditions the waste and transfers it out of the tank. The retrieved waste is transferred to the pretreatment process.

Options for Pretreatment

Pretreatment is performed to separate the waste into its high-activity and low-activity components. One option is to perform no pretreatment. Another option is to limit the volume of waste going to a geologic repository by pretreating waste to accomplish some level of high- and low-activity waste separation. Two bounding alternatives for pretreating tank wastes have been identified, corresponding to the reasonable limits of waste pretreatment (such as evaporation, acid digestion, nuclide separation, ion exchange) to concentrate the radionuclides in a smaller volume. For purposes of this discussion, these bounds are referred to as "minimal" and "extensive" pretreatment. The pretreatment bounds may also influence the relative volumes of high- and low-activity wastes to be stabilized and stored/disposed of. The pretreated waste would be transferred to the waste immobilization process.

Minimal pretreatment would use sludge washing to separate the waste into a smaller volume fraction of high-activity waste (containing the majority of radionuclide activity), and a larger volume fraction of low-activity waste. The low-activity waste might be subjected to an evaporation step to reduce the volume resulting from the sludge washing process.

Extensive pretreatment would use advanced solvent extraction methods to provide the maximum level of radionuclide partitioning. Hazardous nitrates, metals, and other selected chemicals would be removed from the low-activity waste stream, and the volume of the high-activity waste fraction would be minimized.

Options for Immobilization

The immobilization would stabilize the waste coming from the pretreatment process. Both the low-activity waste stream and the high-activity waste stream would be stabilized. The stabilized waste would be transferred to storage or disposal.

High-activity waste stabilization options include vitrification, ceramic forms and calcination. After stabilizing, the high-activity waste fraction would comply with any likely waste form criteria for geologic repository acceptance and transportation.

Low-activity waste stabilization options include vitrification, glass cullet in a sulfur cement and cement polymer-based grout. The current plan provides that the encapsulated cesium and strontium would meet the waste form criteria for geologic repository acceptance and transportation. The first option is overpacking the capsules. If the repository waste form criteria cannot be achieved by overpacking, the capsules would be stabilized the same as the high-activity waste fraction above (e.g., vitrification, ceramic or calcination).

Options for Disposal/Storage

The disposal options include disposal onsite, disposal offsite and interim storage pending disposal.

High-activity waste disposal options include emplacement of the stabilized waste in an offsite geologic repository or in interim storage onsite pending availability of an offsite geologic repository.

Low-activity waste disposal options depend on the stabilized waste form and include: Burial in onsite landfills in containers; burial in onsite vaults; burial onsite in steel culverts with liners and leachate collection; and soil melt slurry injection to a landfill. Some of these options would accommodate retrievability if desired.

No Action Alternative

The no action alternative for TWRS would be continued storage of tank wastes and encapsulated cesium and strontium without preparation for disposal. However, the no action alternative includes continued maintenance, monitoring, and safety upgrades. No action also includes maintaining the low-activity waste grouting facility in a standby condition in case its operation is necessary before new DSTs are available to provide tank space to resolve safety issues. The no-disposal action alternative was analyzed in the HDW EIS and the DOE intends to update the HDW EIS analyses in the TWRS EIS. The no action alternative is included to comply with the CEQ regulations (40 CFR 1502.14(d)) for consideration of a no action alternative.

Interim Actions

DOE plans to complete the TWRS EIS by approximately October 1996. DOE may need to undertake interim actions while the TWRS EIS is being prepared. Any interim actions undertaken would have to be independently justified because, for example, they are activities needed to maintain the current waste management system; collect data and resolve urgent pretreatment issues; or protect workers, the public and the environment. Any interim actions would be actions on which decisions were needed prior to the scheduled completion of the TWRS EIS. None of the interim actions would prejudice the ultimate decision to be made on the basis of the TWRS EIS because they would be needed regardless of which alternatives are selected in that EIS. As described previously in this notice, DOE has already identified the construction of new tank capacity needed to resolve tank safety issues (identified in the TPA as the Multi-function Waste Tank Facility) as an interim action, and is planning to prepare a separate EIS for that project. DOE plans to complete the new tanks EIS by September 1994 to support a near-term TPA milestone.

Other interim actions may include system and infrastructure upgrades, replacement of the cross-site transfer system, waste characterization, technology development and demonstration activities including a compact processing unit, and initial retrieval or pretreatment and immobilization activities. These activities, if undertaken, would also require preparation of independent NEPA reviews while the TWRS EIS is in preparation.

Proposed Actions, New Tanks EIS

The proposed new tanks would provide waste storage space needed for resolution of tank safety issues and would not be used for storage of newly generated high-level waste. The new

tanks would be improved versions of the existing DSTs. Each tank would be constructed of double shell stainless steel surrounded by a concrete liner, and would have a 1 million gallon capacity. All tanks would have leak detection monitoring systems and filtered ventilation systems. The EIS will address the construction of new tanks and associated new transfer lines, and the tank operations. For the purposes of this interim action EIS, operations considered would be limited to the retrieval, pH adjustment or alkalinity control, and storage of wastes from the Watchlist safety tanks. The primary focus of the EIS would be the resolution of safety issues related to the three tanks that are on the Watchlist because of hydrogen generation (241–SY–101, 241–SY–103 and 241–AN–104), but the tanks may also be used to alleviate safety concerns in other Watchlist tanks (50 tanks are currently on the Watchlist). Further decisions regarding the disposition of these wastes will be addressed by the TWRS EIS.

Alternatives, New Tanks EIS

The new tanks EIS will evaluate all reasonable alternatives. Alternatives which have been tentatively identified for possible evaluation in this EIS include but are not limited to the following:

TPA Preferred Alternative

The TPA preferred alternative is to construct two DSTs in the 200 West Area by 1997 and four DSTs in the 200 East Area by 1998. These new tanks would be utilized to store wastes retrieved from Watchlist tanks in order to resolve tank safety issues. Resolution of safety issues for these Watchlist tanks may include up to a three-to-one dilution of the wastes with water and/or caustic solutions. In order to achieve this dilution a combination of new and existing tank space would be used.

Construct Fewer Tanks

Under this alternative, the need for additional tanks would be reduced using alternatives to retrieval for tank safety issue mitigation. An example would be the use of mixer pumps for mitigating the flammable gas safety issue.

No Action

The EIS will also address the no action alternative, under which no additional underground high-level waste storage tanks would be built in the near term. No action would leave the safety issues for the Watchlist safety tanks unresolved.

Preliminary Identification of Environmental Issues

The issues listed below have been tentatively identified for analysis in both EISs. This list is presented to facilitate public comment on the scope of the EISs. It is not intended to be all-inclusive or to predetermine the potential impacts of any of the alternatives.

(1) Potential effects on the public and on-site workers from releases of radiological and nonradiological materials during normal operations and from reasonably postulated accidents;

(2) Pollution prevention and waste minimization;

(3) Potential effects on air and water quality and other environmental consequences of normal operations and potential accidents;

(4) Potential cumulative effects of operations at the Hanford Site, including relevant impacts from other past, present, and reasonably foreseeable activities at the site;

(5) Potential effects on endangered species, floodplain/wetlands, archaeological/historical sites;

(6) Potential effects on future decommissioning decisions;

(7) Effects from normal transportation and postulated transportation accidents;

(8) Potential socioeconomic impacts on surrounding communities;

(9) Unavoidable adverse environmental effects;

(10) Short-term uses of the environment versus long-term productivity;

(11) Potential irretrievable and irreversible commitment of resources.

Regulatory Framework

The TPA sets milestones to achieve coordinated cleanup of the Hanford Site and provides a legal and procedural framework for regulatory compliance during cleanup. During the development of both EISs, DOE intends to fully comply with the TPA, as modified by the change control process.

Federal and State laws that are of major importance to waste management activities at Hanford include the Atomic Energy Act of 1954; RCRA; the Washington State Hazardous Waste Management Act, Chapter 70.105 RCW; and the Federal Facility Compliance Act of 1992. The Atomic Energy Act requires the management, processing, and use of radioactive materials in a manner that protects workers, public health, and the environment. RCRA and the Washington State Hazardous Waste Management Act establish requirements for management of hazardous waste, including generation, treatment, storage, transportation, and disposal. RCRA also requires cleanup of hazardous waste releases from past and present operations when the releases pose a threat to human health or the environment.

Related NEPA Documentation

NEPA documents that have been or are being prepared for activities at Hanford include, but are not limited to, the following:

(1) Final Environmental Impact Statement for Disposal of Hanford Defense High-Level Transuranic and Tank Wastes, Hanford Site, Richland Washington, DOE/EIS–0113, Vol. 1, 2, 3, 4, and 5, December 1987. U.S. Department of Energy, Washington, D.C. As discussed in the Background section of this notice, the HDW EIS analyzed the impacts of Hanford tank waste treatment and disposal.

(2) Final Environmental Statement for Waste Management Operations, Hanford Reservation, Richland Washington, ERDA–1538, Vol.1 and 2, 1975. U.S. Energy Research and Development Administration, Washington, D.C. This EIS analyzed the environmental impacts of Hanford Site waste management operations.

(3) Hanford Remedial Action-Environmental Impact Statement. The HRA-EIS will assess the potential environmental consequences of alternatives for conducting a remedial action program at the Hanford Site for inactive hazardous, high- and low-level radioactive, transuranic and mixed-waste sites. DOE published a NOI to prepare the HRA-EIS on August 21, 1992 (47 FR 37959–37964) and intends to issue the draft HRA-EIS in 1994.

(4) Programmatic Environmental Impact Statement for Environmental Restoration and Waste Management. The EM-PEIS will analyze the complex-wide environmental restoration and waste management issues and alternatives. DOE published the NOI to prepare the EM-PEIS on October 22, 1990 (55 FR 42633) and issued the Implementation Plan on December 23, 1993. The TWRS EIS will discuss its relationship to the EM-PEIS and how issues addressed in the EM-PEIS could affect the alternatives analyzed in the TWRS EIS.

(5) Programmatic Environmental Impact Statement for Reconfiguration of the Nuclear Weapons Complex (DP-PEIS). The DP-PEIS will analyze longterm reconfiguration strategies and evaluate those strategies against the consequences of maintaining existing defense production facilities. DOE published an Implementation Plan in February 1992. In July 1993, DOE

published a revised NOI and intends to issue a revised Implementation Plan based on that NOI.

(6) Tank Safety Environmental Assessments. DOE has completed eight environmental assessments and issued corresponding findings of no significant impact for activities to sample and characterize tank wastes or to modify tank equipment to improve safety conditions.

(7) Stabilization Operations at the Plutonium Finishing Plant. In September 1993, DOE announced plans to prepare an EA for this proposed action and invited public comments on the scope. On the basis of comments, including those received at four public meetings, DOE is considering whether to prepare an EIS instead. Alternatives under consideration may generate liquid high-level wastes requiring storage in the Hanford tank farm.

Issued in Washington, DC, this 25th day of January, 1994.

Peter N. Brush,

Acting Assistant Secretary, Environment, Safety and Health.

[FR Doc. 94–1932 Filed 1–27–94; 8:45 am]

BILLING CODE 6450–01–P

Floodplain Statement of Findings for Proposed Installation of Bedrock and Unconsolidated Monitoring Wells at the K–25 Site, Oak Ridge, TN

AGENCY: Department of Energy (DOE).

ACTION: Floodplain statement of findings.

SUMMARY: This is a Floodplain Statement of Findings for proposed installation of bedrock and unconsolidated monitoring wells on the Oak Ridge K–25 Site. DOE proposes to drill four monitoring wells in the Poplar Creek Floodplain, located in Roane County, Tennessee. DOE prepared a Floodplain Assessment describing the effects, alternatives, and measures designed to avoid or minimize potential harm to or within the affected floodplain. DOE will endeavor to allow 15 days of public review after publication of the Statement of Findings before implementing the proposed action.

FOR FURTHER INFORMATION CONTACT: Information on the proposed action (including maps of potentially disturbed floodplain areas) is available from: Mr. Robert C. Sleeman, Director, Environmental Restoration Division, Oak Ridge Operations Office, U.S. Department of Energy, Post Office Box 2001, Oak Ridge, Tennessee 37831–8541, (615) 576–0715, (615) 576–6074 (Fax).

FURTHER INFORMATION ON GENERAL DOE FLOODPLAIN/WETLANDS ENVIRONMENTAL REVIEW REQUIREMENTS IS AVAILABLE FROM: Ms. Carol M. Borgstrom, Director, Office of NEPA Oversight (EH–25), U.S. Department of Energy, 1000 Independence Avenue SW., Washington, DC 20585, (202) 586–4600 or (800) 472–2756.

SUPPLEMENTARY INFORMATION: This is a Floodplain Statement of Findings for the Proposed Installation of Bedrock and Unconsolidated Monitoring Wells on the Oak Ridge K–25 Site, prepared in accordance with 10 CFR part 1022. A Notice of Floodplain Involvement was published in the Federal Register on October 4, 1993, and a floodplain assessment was prepared.

To facilitate future remedial actions at the K–25 Site under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), DOE is proposing to drill four borings. Two borings would be into bedrock to depths ranging from approximately 30 to 150 feet, and the two other borings would be in the unconsolidated sediments overlying the bedrock to depths from approximately 15 to 50 feet. Two locations would be involved, with one bedrock and one unconsolidated monitoring well at each location. Each borehole would be converted to a monitoring well for the purpose of collecting hydrologic and water quality data. The wells are proposed to be located in the floodplain because the sites were selected to intersect and monitor subsurface flow paths near Poplar Creek.

Alternatives to the proposed action included (1) No action, and (2) alternate sites. The no action alternative would result in DOE being unable to accurately measure possible contaminant releases to the local environment. Alternate sites away from Poplar Creek (outside of the floodplain) could not adequately monitor subsurface flow paths. The proposed action is necessary to enable DOE to pursue future remedial actions and meet the requirements of CERCLA. The assessment reveals that the installation of monitoring wells at the K–25 site would have no adverse impact on the 100-year floodplain of Poplar Creek, nor alter the existing normal channel cross section or storage capacity of Poplar Creek. No measures are needed to minimize potential harm to or within the affected floodplain. The proposed action would conform to applicable State or local floodplain protection standards. DOE will endeavor to allow 15 days of public review after publication of the Statement of Findings prior to implementing the proposed action.

Issued in Washington, DC, on January 10, 1994.

James J. Fiore,

Director, Office of Eastern Area Programs, Office of Environmental Restoration.

[FR Doc. 94–1955 Filed 1–27–94; 8:45 am]

BILLING CODE 6450–01–P

Office of Fossil Energy

Clean Coal International Technology Transfer Program; Amendment to Notice Meeting

AGENCY: Office of Fossil Energy, DOE.

ACTION: Amendment to notice of meeting; Clean Coal International Technology Transfer Program.

SUMMARY: On December 17, 1993, the United States Department of Energy (DOE), Office of Fossil Energy, published in the Federal Register (58 FR 65980) a Notice of Meeting; Clean Coal International Technology Transfer Program.

The objective of the Notice was to notify interested companies, the international community, and the public of the Department's intent to hold a public meeting that will assist DOE in meeting its statutory requirements of section 1332 of Public Law 102–486, the Energy Policy Act of 1992 (EPACT).

SUPPLEMENTARY INFORMATION: The Opening Plenary Session of the meeting on February 10, 1994, will begin at 9 a.m. instead of 10 a.m. as stated in the original notice.

The meeting on February 11, 1994, to address financing will begin at 9 a.m. and is scheduled to end at 4:50 p.m.; this is instead of a three-hour panel called for in the original Federal Register notice.

FOR FURTHER INFORMATION CONTACT: Background information, a detailed agenda, and a pre-registration form may be obtained by contacting Jean Lerch by phone 202–586–7320, fax 202–586–8488 or by writing to: Ms. Jean Lerch, U.S. Department of Energy, FE–20, room 4G–052, Washington, DC 20585.

Issued in Washington, DC, January 25, 1994.

Jack S. Siegel,

Acting Assistant Secretary, Fossil Energy.

[FR Doc. 94–1943 Filed 1–27–94; 8:45 am]

BILLING CODE 6450–01–M

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APPENDIX C
Annotated Outline of the Environmental Impact Statement

COVER SHEET
The one-page cover sheet will identify the U.S. Department of Energy (DOE) and Washington State Department of Ecology (Ecology) as co-preparers of the Tank Waste Remediation System (TWRS) Environmental Impact Statement (EIS) and the title of the proposed action. It will also identify the State and county(ies) in which action would occur, name, address, and phone number of agency contact person(s), a designation of the document as draft, final, draft supplemental or final supplemental EIS, a one paragraph abstract of the EIS, and the closure date for comments.

SUMMARY
The Summary will present a synopsis of the EIS. It will also identify the major conclusions, areas of concern, issues to be resolved, and highlight differences among alternatives.

INTRODUCTION
ALTERNATIVES
AFFECTED ENVIRONMENT
ENVIRONMENTAL CONSEQUENCES
SCOPING, PUBLIC PARTICIPATION, AND CONSULTATION

TABLE OF CONTENTS
The Table of Contents will provide a listing of all document sections, subsections, tables, figures, and appendices as well as the location of each.

ABBREVIATIONS AND ACRONYMS
CHEMICAL COMPOUNDS AND RADIOACTIVE ISOTOPE DESIGNATIONS

1.0 INTRODUCTION
The Introduction will provide background information, explain important features of the Hanford Site, and discuss the limits of the issues to be addressed within the scope of the TWRS EIS. The organization of the EIS and the focus and interrelationship of the various portions of the document will also be explained.

1.1 BACKGROUND
1.2 SCOPE OF TWRS ENVIRONMENTAL IMPACT STATEMENT
1.3 DECISIONS TO BE SUPPORTED BY THE TWRS EIS

1.4 ALTERNATIVES
1.5 CONTENTS OF THE TWRS EIS

2.0 PURPOSE AND NEED FOR ACTION

The purpose and need for DOE and Ecology action will be explained in this section. The environmental conditions and legal and regulatory requirements for DOE and Ecology will be summarized.

3.0 DESCRIPTION AND COMPARISON OF ALTERNATIVES

This section will describe the approach applied to develop the alternatives. The various alternatives will be described in detail. A summary comparison of the potential consequences of the proposed action and of each alternative also will be provided. Finally, alternatives considered but dismissed from further analysis will be described and the decisions to dismiss them will be explained.

3.1 INTRODUCTION
3.2 SITE AND WASTE DESCRIPTION
3.3 DEVELOPMENT OF ALTERNATIVES
3.4 TANK WASTE ALTERNATIVES
3.5 CESIUM AND STRONTIUM CAPSULES ALTERNATIVES
3.6 BORROW SITE SUMMARY
3.7 COMPARISON OF ALTERNATIVES
3.8 ALTERNATIVES CONSIDERED BUT DISMISSED

4.0 AFFECTED ENVIRONMENT

A description of the affected environment that will be the basis for analysis of the impacts of the proposed action and the alternatives will be provided in this section. Also provided will be data to support comparisons between the potential impacts of the alternatives. Existing contamination will be discussed for each affected environmental medium (e.g., soil, air, water). Minority communities and low-income communities that may be affected by the TWRS actions will be identified.

4.1 GEOLOGY
4.2 WATER RESOURCES
4.3 METEOROLOGY AND AIR QUALITY
4.4 BIOLOGICAL AND ECOLOGICAL RESOURCES
4.5 CULTURAL RESOURCES
4.6 SOCIOECONOMICS
4.7 LAND USE
4.8 VISUAL RESOURCES AND NOISE
4.9 NOISE
4.10 TRANSPORTATION

5.0 ENVIRONMENTAL CONSEQUENCES

An assessment of the potential environmental impacts of each component of the alternatives will be presented in this section. The impacts of each alternative and any technology associated with each alternative will be compared to the impacts of the other alternatives. This section will focus on the analysis and comparison of alternatives by presenting the impacts through a presentation of impact according to environmental issues identified in Section 4.0.

Where adverse impacts are identified, methods to mitigate these impacts will be addressed. The section will also discuss cumulative impacts of TWRS activities, plus the impacts of other Federal and non-Federal activities, that can be expected throughout the time frame of the TWRS project. Projected adverse impacts will be discussed. The section will also present conflicts between short-term and long-term considerations, irretrievable resource commitments, land-use planning conflicts, energy and natural resource consumption, and conservation and pollution prevention. Potentially significant, adverse, and disproportionate impacts on minority communities and low-income communities will be addressed.

5.1 GEOLOGY AND SOILS
5.2 WATER RESOURCES
5.3 AIR QUALITY
5.4 BIOLOGICAL AND ECOLOGICAL RESOURCES
5.5 CULTURAL RESOURCES
5.6 SOCIOECONOMICS
5.7 LAND USE
5.8 VISUAL RESOURCES
5.9 NOISE
5.10 TRANSPORTATION
5.11 ANTICIPATED HEALTH EFFECTS
5.12 ACCIDENTS
5.13 CUMULATIVE IMPACTS
5.14 UNAVOIDABLE ADVERSE IMPACTS
5.15 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY
5.16 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES
5.17 CONFLICTS BETWEEN THE PROPOSED ACTION AND THE OBJECTIVES OF FEDERAL, REGIONAL, STATE, LOCAL, AND TRIBAL LAND-USE PLANS, POLICIES OR CONTROLS
5.18 POLLUTION PREVENTION
5.19 ENVIRONMENTAL JUSTICE
5.20 MITIGATION MEASURES

6.0 STATUTORY AND REGULATORY REQUIREMENTS

This section will describe Federal and State statutes, regulations, and policies applicable to the TWRS proposed action and each of the alternatives.

- 6.1 RELEVANT ENVIRONMENTAL REQUIREMENTS
- 6.2 ABILITY OF TANK WASTE ALTERNATIVES TO COMPLY WITH REGULATORY REQUIREMENTS
- 6.3 ABILITY OF CESIUM AND STRONTIUM CAPSULES ALTERNATIVES TO COMPLY WITH REGULATORY REQUIREMENTS

7.0 SCOPING, PUBLIC PARTICIPATION, AND CONSULTATIONS

This section will describe how the scope of this EIS was established and the public participation processes from scoping through the public comment of the Draft EIS. Interagency and intergovernmental consultation and coordination will also be summarized.

- 7.1 SCOPING SUMMARY
- 7.2 DEIS PUBLIC PARTICIPATION PROCESS
- 7.3 CONSULTATION WITH TRIBES AND FEDERAL, STATE, LOCAL, AND REGIONAL AGENCIES
- 7.4 PUBLIC COMMENT PROCESS FOR THE TWRS DEIS

8.0 LIST OF PREPARERS

The names and the roles of the project individuals primarily responsible for preparing the EIS will be listed in this section.

- 8.1 DEPARTMENT OF ENERGY
- 8.2 WASHINGTON STATE DEPARTMENT OF ECOLOGY
- 8.3 DEPARTMENT OF ENERGY CONTRACTORS

GLOSSARY
REFERENCES
DISTRIBUTION LIST

APPENDICES

Technical materials prepared for the EIS to support the analyses will be placed in an appendix. A summary of the analysis and conclusion, referencing the appendix, will be presented in the text of the EIS. Examples of such technical material are the groundwater and air modeling data tables, calculations, and laboratory analytical results. Appendix K will only appear in the final Environmental Impact Statement.

APPENDICES:

A. TWRS EIS WASTE INVENTORY DATA
B. DESCRIPTION OF ALTERNATIVES
C. ALTERNATIVES CONSIDERED BUT REJECTED FROM FURTHER EVALUATION
D. ANTICIPATED RISK
E. RISKS FROM ACCIDENTS
F. GROUNDWATER
G. AIR MODELING
H. SOCIOECONOMIC IMPACT ANALYSIS
I. AFFECTED ENVIRONMENT
J. CONSULTATION LETTERS
K. DRAFT EIS COMMENTS AND AGENCY RESPONSES

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APPENDIX D
Tank Waste Remediation Systems (TWRS) Environmental Impact Statement (EIS) Scoping Comments and Responses

The following appendix contains a compilation of and responses to the scoping comments. A summary of comments and responses is provided in Section 3.4. Comments from different groups and individuals addressing similar issues are grouped by subject. Following each comment in parenthesis are the initials of the individual or group acronyms that served as the source(s) of the summarized comment. Following each comment is a response relating how the particular comment will, or will not, be addressed in the TWRS EIS. A list of the commentors initials or group acronyms and full names are provided at the end of this appendix.

EIS SCOPE AND CONTENT

1. **Comment** - The characterization referenced in the High-Level Defense Waste EIS cannot be completed in the time it will take to complete the TWRS EIS. Therefore, the scope of the TWRS EIS should be reduced to discuss only supernatant at this time, because that is all that there is information to support. (LH)

   Response - *DOE and Ecology consider it necessary to address all the forms of tank waste in the TWRS EIS in order to comply with Council of Environmental Quality (CEQ) regulations, to apply the National Environmental Policy Act and Washington State Environmental Policy Act early in the process of decision-making (40 CFR 1501.2), and to evaluate the parts of a course of action in a single impact statement (40 CFR 1502.4). If the waste characterization data is found to be incomplete or unavailable, DOE proposes to proceed on the basis of CEQ regulatory guidance for alternative impact evaluation methods including "theoretical approaches" (40 CFR 1502.22). Supplemental EISs may be necessary as additional characterization is performed.*

2. **Comment** - Evaluation of long-term storage of high-level waste (HLW) product (e.g., glass) should be conducted because the geologic repository is speculative and in the far future. (LH)

   Response - *Storage of stabilized waste forms, such as glass, is within the scope of the TWRS EIS. The EIS will address issues associated with interim storage including the length of time HLW products may be stored onsite. Presently, there is no time limit on the storage. The EIS will not support a final decision regarding the shipment of HLW to a specific geologic repository. Rather, the EIS will address waste shipment to a generic geologic repository as a basis of comparison of the impacts of alternatives that include offsite transportation and disposal with alternatives that include onsite disposal. When a final site is selected for the*

nation's geologic repository, additional analysis may be required to support the transportation and disposal of HLW.

3. **Comment** - The integration of interim or long-term storage of tank wastes with other waste requiring shielding at Hanford should be considered in the EIS. The overall strategy for waste storage should be considered by a Sitewide EIS, which is consistent with the applicable programmatic EIS. (YIN)

   Response - *Alternative strategies for interim or long-term waste storage will be included in the TWRS EIS, as will an evaluation of the cumulative impacts of each of the TWRS EIS alternatives in relation to other Hanford Site waste storage activities. The analysis for waste storage in the TWRS EIS could provide an informational basis for future consideration of a Sitewide strategy for waste remediation and storage. However, the creation of a Sitewide waste remediation and storage plan for Hanford's wastes is beyond the scope of the TWRS EIS.*

4. **Comment** - The cleanup of tank waste needs to be done considering the interrelationship with other contaminated areas on the Site. For example, how can the tanks be effectively cleaned up while the nearby highly contaminated cribs remain unremediated? (DB and SC)

   Response - *Cleanup of the Hanford Site's waste is a complex task. Alternative strategies for tank waste remediation and cleanup will be included in the TWRS EIS, as will an evaluation of the cumulative impacts of each of the TWRS EIS alternatives in relation to other Hanford Site cleanup activities. The analysis for tank waste remediation and cleanup in the TWRS EIS could provide an informational basis for future consideration of a Sitewide strategy for waste cleanup. However, the creation of a Sitewide waste remediation and cleanup strategy for all of Hanford's wastes is beyond the scope of the TWRS EIS.*

5. **Comment** - The scope of the EIS is not equally understood with respect to supernatant, saltcake, and sludge. "Allowable Phasing" should be pursued wherein two EISs would be prepared; the first dealing with supernatant and saltcake and facilities for low-level waste (LLW); the second to be started at a later time to address sludge, high-level facilities, and tank closure. The second EIS associated with HLW could be postponed until after 1998 and still not jeopardize Tri-Party Agreement (TPA) milestones. (LH)

   Response - *The TWRS EIS will not evaluate the need for separate EISs. Through the Tri-Party Agreement with DOE, the U.S. Environmental Protection Agency, and Ecology, the analysis for remediation of Hanford's tank waste should be comprehensive and include all waste types within the tanks as well as the subsequent options for management, retrieval, treatment, storage, and disposal of these wastes. The TWRS EIS analysis will evaluate tank farm closure in relation to other TWRS activities for cumulative impacts only.*

6. **Comment** - The Tribes' view is that waste management and safety issue resolution at the tank farms comprise but one component of waste management on the Central Plateau as a whole. In a series of meetings that staff have held with representatives of the Plutonium Finishing Plant, PUREX, and the tank farms in recent weeks, it was readily apparent to us that there are not now either long-term objectives or a broader, Sitewide strategy to integrate all aspects of waste management and decontamination and decommissioning activities of surplus production facilities. (CTUIR)

   Response - *This EIS will evaluate the cumulative impacts each alternative will have on the Site with respect to other Hanford Site waste management activities. The alternatives proposed for analysis in the TWRS EIS are being considered part of the Hanford Site strategy for tank waste remediation. The analysis in the TWRS EIS could provide an informational basis for future consideration of a Sitewide strategy to integrate all waste management and decontamination and decommissioning activities. The TWRS EIS will evaluate the cumulative impacts of decontamination and decommissioning activities related to existing or new TWRS facilities. However, the creation of a Sitewide strategy for waste management and facilities decontamination and decommissioning is beyond the scope of the TWRS EIS.*

7. **Comment** - One important element of such a waste management and decontamination and decommissioning strategy would be an effective land-use plan for the Central Plateau. Such a plan would comprehensively assess and plan for Hanford Site waste management and storage needs by fully accommodating the Environmental Restoration Disposal Facility; siting of future waste management and storage facilities; the tank farms, and planned waste treatment and vitrification facilities, providing sufficient onsite storage space for vitrified waste logs and other nuclear and chemical waste materials; and addressing the ongoing need for emergency response capabilities and evacuation routes. (CTUIR)

   Response - *Sitewide emergency response capabilities and evacuation routes have already been determined for the Hanford Site. However, the TWRS EIS will provide analysis for emergency response requirements based on the mitigation of risks associated with the TWRS EIS alternatives. The TWRS EIS will not address the creation of a land-use plan to address onsite waste handling and disposal for all Hanford Site's waste. The TWRS EIS will assess existing land use in the Central Plateau as a basis for the description of the existing environment and assess planned and proposed future land use as part of the cumulative environmental impacts associated with each of the alternatives evaluated in the TWRS EIS. The EIS will also evaluate the impacts associated with each of the TWRS facilities and issues identified by the comment including treatment, storage, disposal facilities, accidents, and transportation.*

8. **Comment** - Improvements to tank farm infrastructure should be addressed, particularly given extended delays in ultimate waste retrieval and treatment. (CTUIR)

Response - *Improvements to the tank farm infrastructure will be evaluated based on the alternatives and the impacts associated with the safe implementation of the various alternatives examined in the TWRS EIS. Infrastructure improvements will also be discussed for routine operations and safe management through the No Action alternative. Other infrastructure improvements to the tank farm facilities have been and will continue to be evaluated in separate National Environmental Policy Act documents prior to the completion of the TWRS EIS. The TWRS EIS will address improvements in the tank farm infrastructure in the following ways: (a) as part of the baseline conditions described and assessed in the No Action alternative, (b) as part of each alternative description and analysis to the extent that implementation of the alternative requires infrastructure upgrades, and (c) as part of the cumulative impacts associated with planned or proposed infrastructure improvements.*

9. **Comment** - In deciding to eliminate in-place disposal of single-shell tank (SST) waste as an alternative to be evaluated in the TWRS EIS, did DOE estimate and compare short-term releases from leakage of sluicing water to long-term releases from in-place disposal? (EF)

Response - *The analysis of impacts associated with in-tank disposal will be presented in the TWRS EIS. This analysis will include a comparison of in-tank treatment and disposal with impacts associated with no action and those associated with selective retrieval as well as extensive retrieval of Hanford's tank wastes.*

10. **Comment** - Get on with characterization, retrieval, treatment, and disposal of tank wastes making full use of all available or promising technologies and resources. (CTUIR and DB)

Response - *DOE and Ecology in a continuing effort to comply with the TPA, will evaluate the impacts of tank waste characterization, retrieval, treatment, and disposal in the TWRS EIS in accordance with the requirements of the National Environmental Policy Act and Washington State Environmental Policy Act. The use of existing and promising technologies in this evaluation effort will be considered during the preparation of the TWRS EIS.*

11. **Comment** - Minimize the need for new tanks and tank farm expansion. (CTUIR)

Response - *The TWRS EIS will evaluate, if necessary, the impacts of adding the minimum number of new tanks to the tank farm needed to implement alternatives. This analysis will discuss the potential need for new tanks to facilitate safe operations, the reduction of risks to Site workers and public health, and the elimination of potential adverse environmental releases.*

12. **Comment** - Several commentors expressed the concern that the EIS would duplicate analysis of contaminants in the Technical Options Report, resulting in a waste of time and money. (BC, HD, TM, and EMS)

Response - *The Technical Options Report is a resource that will be used in the development of the TWRS EIS, along with other existing data. The Technical Options Report analysis will be supplemented with data unavailable at the time the report was completed. The options analyzed will be configured into EIS alternatives that reflect all components of the retrieval, treatment, storage, and disposal processes examined as well as options recommended by commentors during the scoping process. The EIS also will provide an assessment of the environmental impacts of each of the TWRS EIS alternatives.*

13. **Comment** - Several commentors expressed concern that the TWRS EIS could result in a recommendation for actions other than those identified in the TPA and that the EIS process could result in delays in attaining TPA tank waste remediation milestones. (BC, CS, CD, DB, HD, and TM)

Response - *The co-preparers of the TWRS EIS, DOE and Ecology, are also co-signatories of the TPA. However, National Environmental Policy Act and DOE regulations, as well as the Washington State Environmental Policy Act, require DOE and Ecology to complete an EIS on all reasonable alternatives as well as a no action alternative prior to implementing an action that could have impacts on human health and the environment.*

ALTERNATIVES

14. **Comment** - Waste should be disposed of in-tank in the old tanks. Following disposal, the tanks should be backfilled with gravel and disposed of in-tank. The commentator acknowledged that this alternative may not be suitable for all tanks. (GR)

Response - *In-tank treatment and disposal is a reasonable alternative to the proposed action. Analysis of the Minimal Retrieval (In Situ Vitrification) alternative will be included in the TWRS EIS. The analysis will include an In Situ Fill and Cap subalternative option and the Selective Retrieval alternative that includes in-tank treatment and disposal of some waste and out-of-tank treatment and disposal of some waste.*

15. **Comment** - DOE should implement a process called in situ or something similar, wherein the barrels (stainless steel) are put in abundant sand and zapped with high-powered electricity to enclose them in glass. The containers would be almost indestructible. (ET)

Response - *The commentor is referring to in-tank (in situ) vitrification. In Situ Vitrification is a treatment technology that will be considered in the TWRS EIS. In addition to an evaluation of an alterative that addresses the in-tank vitrification of all tank wastes, an alternative that will address out-of-tank vitrification of tank wastes will also be addressed in the EIS. Out-of-tank vitrification will be addressed as part of the Selective Retrieval and Extensive Retrieval alternatives. The EIS will assess the impacts associated with various vitrification technologies*

including vitrification of the tank wastes as a single waste stream in a single plant, separation of HLW and LLW into segregated waste streams to be vitrified in separate vitrification plants, and varying sizes and types of vitrification plants.

16. **Comment** - Some commentors supported in-place disposal of SST waste, or more generally all tank waste, based on economic, technical, or environmental grounds. (EF and LH)

Response - *In-tank stabilization and disposal of SST waste will be included as part of the Minimal Retrieval alternative, which will be discussed in detail in the EIS. In addition to an evaluation of the in-tank disposal of all tank wastes, the Selective Retrieval alternative will address both in-tank disposal of some tank wastes and out-of-tank disposal of some tank wastes. For each alternative that includes in-tank disposal of tank wastes, various technologies for stabilization and disposal will be presented in the EIS.*

17. **Comment** - Remove and grout all liquids from tanks, then backfill the tanks with large rocks, top with concrete, and install permanent vents. (BK)

Response - *Removal and stabilization of liquid tank wastes will be included as part of the Minimal Retrieval alternative evaluated in the TWRS EIS. In addition to an evaluation of the out-of-tank treatment and stabilization of tank wastes alternative (Extensive Retrieval), the Selective Retrieval alternative will address in-tank disposal and out-of-tank disposal of some tank waste. For each of the TWRS EIS alternatives that includes out-of-tank treatment, storage, and disposal of tank wastes, various technologies (including the use of grout) for the stabilization of LLW will be evaluated in the TWRS EIS.*

18. **Comment** - In Situ Vitrification was a disaster at 100-B. Have they improved the off-gas treatment to capture and treat all off-gasses? (JH)

Response - *Improvements have been made in collection and treatment of off-gas from the in situ (in-tank) vitrification process. In Situ Vitrification is one of the technologies associated with the TWRS EIS Minimal Retrieval alternative that will be evaluated. As part of the analysis of the in-tank vitrification technologies, environmental impacts (including off-gas emissions resulting from the use of unproven technology) will be presented in the EIS. This analysis should provide the information necessary to assess the in-tank vitrification and to compare the impacts of this technology with impacts associated with other alternatives and technologies assessed in the EIS.*

19. **Comment** - One commentor supported an alternative that would involve grouting the retired canyon facilities with hot grout. (BK)

Response - *The TWRS EIS will not provide an evaluation of an option that would involve using the retired canyon facilities for storage of grouted tank waste (hot grout).*

20. **Comment** - A Resource Conservation and Recovery Act (RCRA) disposal of tank waste should be included in the in-tank stabilization and disposal alternative. (GP)

Response - *Applicable regulations, including RCRA, will be addressed for each of the TWRS EIS alternatives. This information will be presented in a comparative manner to enable the public and decision-makers to evaluate the relative ability of each alternative to comply with applicable laws and regulations. To the extent that wastes, technologies, or storage and disposal options are regulated by Federal or Washington State agencies, the EIS will address compliance issues.*

21. **Comment** - One commentor recommended research to develop technology to launch tank waste to the sun or out of the solar system. (GS)

Response - *Disposal of waste in outer space will not be addressed in the TWRS EIS. The selection of a national waste repository or policy is not within the scope of the TWRS EIS. However, the risks associated with the transportation of wastes to a generic waste repository will be analyzed in the TWRS EIS. The TWRS EIS will address the disposal of tank waste in a generic geologic repository to facilitate a comparison of the relative environmental impacts of the various alternatives.*

22. **Comment** - What will be the final disposal site for HLW if the National Repository is not built in Nevada? (JH)

Response - *The selection of a location for a national geologic repository or policy to store or dispose of HLW is not within the scope of the TWRS EIS. However, the TWRS EIS will use a distance of approximately 1,425 km (910 miles) to simulate the transportation risks involved in moving HLW to a geologic repository.*

23. **Comment** - Canisters of waste should be inserted into the sea floor at points of subduction so that the material would eventually be drawn deep into the earth's interior, however this presents unsolvable problems of release while being subducted. (TT)

Response - *Disposal of waste in a seabed subduction zone will not be addressed in the TWRS EIS. The selection of a national waste repository or policy is not within the scope of the TWRS EIS. However, the risks associated with the transportation of wastes to a generic waste repository will be analyzed in the TWRS EIS. The TWRS EIS will address the disposal of tank waste in a generic geologic repository to facilitate a comparison of the relative environmental impacts of the various alternatives.*

24. **Comment** - One commentor suggested an alternative that would involve storage of materials several thousand feet down in a stable portion of the continent's thick crust. This could be

accomplished by drilling standard oil well holes down approximately 10,000 feet and then stacking stainless-steel canisters on top of each other until they reach a depth of about 5,000 feet. The remainder of the holes would be filled with inert material (i.e., cement or clean fill). (TT)

Response - *Deep-hole disposal of waste will not be addressed in the TWRS EIS. The selection of a national waste repository or policy is not within the scope of the TWRS EIS. However, the risks associated with the transportation of wastes to a generic waste repository will be analyzed in the TWRS EIS. The TWRS EIS will address the disposal of tank waste in a generic geologic repository to facilitate a comparison of the relative environmental impacts of the various alternatives.*

25. **Comment** - Costs associated with large-cask repository disposal of minimized wastes without generation of a LLW stream, as suggested in the TPA, should be identified and compared with the vitrification waste streams. Integration with civilian HLW management under DOE's cognizance should be accomplished. (YIN)

Response - *The commentor is suggesting doing away with the LLW stream and sending all wastes (as minimized) to a repository. The TWRS EIS will evaluate various advantages and disadvantages involving waste separation, pretreatment, storage, and disposal. One issue assessed will be of the potential environmental impacts and costs associated with a greater volume of HLW to be transported to and disposed of in a geologic repository if HLW and LLW streams are not separated. Integration of civilian HLW management under DOE's cognizance is not within the scope of the TWRS EIS. However, the information presented in the TWRS EIS could be used as a basis for future evaluation of integrated HLW management.*

26. **Comment** - Take the glass logs from the proposed furnace and store them in the grout vaults for decay of cesium to innocuous levels. Leave the solids in the tanks to decay. (LP)

Response - *Removal, stabilization, and storage of tank waste will be included as part of the Extensive Retrieval (Ex Situ Vitrification) alternative evaluation in the TWRS EIS. In addition to an evaluation of the Extensive Retrieval (Ex Situ Vitrification) alternative, the Selective Retrieval alternative, which will address in-tank disposal and out-of-tank disposal of some tank wastes, will be addressed in the EIS. For each of the TWRS EIS alternatives that includes out-of-tank treatment, storage, and disposal of tank wastes, various technologies (including the use of grout vaults) for interim storage of these wastes will be evaluated in the TWRS EIS.*

27. **Comment** - Where will low-level vitrified wastes be stored at Hanford? (JH)

Response - *One of the TWRS EIS alternatives to be analyzed would result in the stabilization of LLW and the retrievable disposal of the stabilized waste at Hanford. Disposal options include*

burial in onsite landfills in containers, burial in onsite vaults, burial onsite in steel culverts with liners and a leachate collection system, and soil melt slurry injection in an onsite landfill. The locations of all TWRS facilities, including storage or retrievable disposal, will be discussed in the EIS.

28. **Comment** - One commentor stated that long-term solutions to waste disposal have to be found and the commentor encouraged increased funding for research. (RK)

Response - *Research and development of technologies for waste disposal will be considered in the EIS in the context of the alternatives analysis to the extent that specific technologies may require varying levels of research and development to be fully implementable.*

29. **Comment** - Options that expedite interim storage of wastes at Hanford or other monitored retrievable storage facilities should be considered. (YIN)

Response - *Some of the LLW disposal technologies analyzed in the TWRS EIS would evaluate the potential for future retrieval of Hanford's tank wastes. In this context, the disposal evaluated for Hanford's low-level tank wastes will be addressed as retrievable disposal.*

30. **Comment** - The EIS should evaluate using mobile railcars for transportation and storage of tank waste and existing sidings plus new sidings with berms and liners or concrete aprons under the cars. These methods could allow the addition of early extra storage capacity, ability to store wastes of diverse compositions without mixing, and the ability to transport wastes without new pipelines. (YIN)

Response - *Cross-site transportation and storage of tank wastes will be included as part of the Extensive Retrieval (Ex Situ Vitrification) and Selective Retrieval alternatives evaluations in the TWRS EIS. For each of the TWRS EIS alternatives that include out-of-tank treatment, storage, and disposal of tank wastes, various technologies (including the use of railcars) for interim storage and cross-site transfer of these wastes will be evaluated in the TWRS EIS.*

CLOSURE AND LAND-USE RESTRICTIONS

31. **Comment** - Several commentors identified consideration of closure as an issue of concern. Commentors called for DOE to consider closure as a RCRA Treatment Storage and Disposal facility (e.g., "Clean Closure"), closure under RCRA as a landfill, closure under RCRA Subpart X for In Situ alternatives, or any other reasonable closure alternative(s). Other commentors recommended complete remediation of the tank farms including the tank structures, vadose zone contamination (if any), and remediation and disposal of contaminated soils. (EF, LH, YIN, TM, SC, GB, PK, and CTUIR)

Response - *Closure regulations require detailed analysis of contaminants, environmental impacts, specific-closure plans, and technologies. Closure involves programmatic issues as well as project-specific decisions for which the current TPA and TWRS EIS alternatives lack sufficient information and will not be available at the level required to support programmatic or project-specific decisions regarding closure. However, closure will be evaluated in the EIS to allow for an analysis of the differences among alternatives and as an element in the cumulative impacts discussion.*

32. **Comment** - One commentor supported attainment of the criteria that must be met in order for closure to be meaningfully evaluated, and questioned when DOE expects to meet those criteria and embark on an evaluation of closure. (TM)

Response - *The current TPA and TWRS EIS alternatives lack sufficient information and will not be available at the level required to support programmatic decisions regarding closure. However, closure will be evaluated in the EIS to allow for an analysis of the differences among alternatives and as an element in the cumulative impacts discussion. Analysis of the available data required for compliance with closure regulations will permit DOE to better define a schedule for the evaluation of closure.*

33. **Comment** - TWRS actions that are affected by the requirement to restore the tank farms to a condition that will allow unrestricted usage at closure should be considered. TWRS options for actions that are inconsistent with this objective should be identified early in the National Environmental Policy Act process so natural resources trustees can identify necessary restoration actions and costs. (YIN)

Response - *Closure involves programmatic issues and decisions for which the current TPA and TWRS EIS alternatives lack sufficient information. This information will not be available at the level required to reach a final decision regarding closure and the subsequent usage of the tank farm land. The Draft EIS will address land-use restrictions that may be necessary. DOE and Ecology will evaluate and report the EIS land-use restrictions that may be incurred as a result of implementing any of the TWRS alternatives. DOE and Ecology will consult with natural resource trustees regarding land-use commitments related to each alternative.*

34. **Comment** - Remove and remediate tank wastes leaked into the subsurface. (CTUIR)

Response - *This effort has been identified as part of the tank closure operation and may be evaluated in a subsequent EIS to evaluate tank closure, removal, and subsurface contamination remediation. Closure regulations require detailed analysis of contaminants, environmental impacts, specific closure plans, and technology. Under the current TPA and TWRS EIS alternatives, sufficient information will not be available at the level required to support a final*

decision regarding closure. However, closure will be discussed in the cumulative impacts analysis of the TWRS EIS.

35. **Comment** - A comprehensive (land-use) plan would minimize the need for additional consumption of land for waste management activities by identifying and consolidating all current and foreseeable waste management needs into the smallest possible area, consistent with the recommendations of the Hanford Future Site Uses Working Group. Retain the necessary buffer zone surrounding these facilities, minimize further disturbance or fragmentation of currently intact and relatively undisturbed shrub-steppe habitat, and minimize the need for mitigation. (CTUIR)

Response - *The Hanford Future Site Uses Working Group has identified six options for the future use of the Hanford Site's Central Plateau Area and has made its recommendation to DOE. Consistent with the Working Group's recommendation, DOE is committed to working toward preventing groundwater contamination in the 200 Areas from migrating to other areas on the site. The DOE is continuing to address risks associated with the tanks of greatest importance for cleanup in this area. While there may be some segments of the 200 Areas that can and should be cleaned up quickly, especially if necessary to minimize the migration of contamination, the waste management area designated as "Exclusive" (though not necessarily the buffer zone) would remain "Exclusive" for the foreseeable future.*

36. **Comment** - One commentor stated that while Hanford will be a sacrifice area, the area to be sacrificed should be minimized. (RS)

Response - *The areas to be set aside for long-term retrievable disposal onsite will be evaluated in the TWRS EIS for the various alternatives. The TWRS EIS will discuss the potential area requirements for onsite storage or disposal of Hanford's tank wastes. It is DOE's expectation when or if these waste management areas are needed that the minimal practical area be used.*

VITRIFICATION

37. **Comment** - Some commentors supported a process that would immobilize and dilute the radioactive materials in a glassification process as appropriate. Following glassification, the commentors supported encasement of the treated waste in lead and stainless-steel containers that are suitable for long-term storage. (TT and WB)

Response - *Immobilization in glass (vitrification) is within the scope of the technologies to be considered in the TWRS EIS in the Minimal Retrieval (in-tank), Selective Retrieval (in-tank and out-of-tank), and Extensive Retrieval (out-of-tank) alternatives. In addition, shielding requirements for the encasement of the treated wastes will be addressed in the EIS.*

38. **Comment** - A commentor proposed building a 50-ton-per-day furnace using sodium nitrate from the liquid phase and making the remainder into a glass. The furnace could be built in an excavation in the ground in the 200 Areas. The commentor contended that tanks are necessary but no building is necessary. (LP)

Response - *The proposal represents an alternative technology for tank waste immobilization in glass (vitrification). This option will be analyzed for both the in-tank and out-of-tank alternatives for Hanford's tank wastes. The facilities required for the implementation of each of the TWRS EIS alternatives will be addressed in the EIS.*

39. **Comment** - Vitrified waste should be placed in the form of clinkers or marbles, not ingots. (CL)

Response - *A variety of forms for the vitrified material will be analyzed in the EIS.*

40. **Comment** - Vitrified waste as marbles or clinkers should be placed into casks constructed of already contaminated steel and cement. (CL)

Response - *Interim storage and/or retrievable disposal forms and shielding requirements for the vitrified waste will be examined and the results reported in the TWRS EIS.*

41. **Comment** - Interstitial space in casks around the marbles or clinkers should be filled with either lead or graphite from onsite material. (CL)

Response - *Interim storage and/or retrievable disposal forms and shielding requirements for the vitrified waste will be examined. The results will be reported in the TWRS EIS. Fill materials for interstitial space remaining in the storage and or retrievable disposal containers will be evaluated and reported in the EIS.*

42. **Comment** - Do not fund implementation of unproven, uncertain, and costly long-term plans like vitrification. (EW)

Response - *Vitrification of waste is considered a proven technology and as such will be one of the treatment technologies evaluated in the EIS.*

43. **Comment** - One commentor suggested that the agencies consider the LLW vitrification facility as an interim action. (TM)

Response - *At this time, proceeding with the LLW vitrification facility does not appear to meet the tests of the National Environmental Policy Act regulations 40 CFR 1506.1(a)(2) and(c)(3) for a separate or interim action EIS. If, however, during the preparation of the TWRS EIS,*

independent justification for a separate EIS or an interim action EIS is identified, one would be prepared.

44. **Comment** - Vitrification options using sodium carbonate as a significant portion of the feed material should be considered along with other acceptable waste forms for carbon-14. (YIN)

Response - *The use of sodium carbonate as a significant portion of vitrification feed material will be addressed in the TWRS EIS as will other acceptable feed materials.*

GROUT

45. **Comment** - Some commentors opposed grout as a medium for disposal of waste stating that grout was nothing more than the creation of a surface high-level nuclear waste dump. The commentors asserted that the level of sodium nitrate proposed in grout will cause the grout to disintegrate in the presence of rainfall almost immediately, making grout a technically unacceptable option. (CS, CD, LP and HH)

Response - *The TWRS EIS review of the grout waste form will address the environmental impacts associated with the use of grout including the permanence of grout for waste stabilization. This information will be available in the EIS and will be presented in a manner that will enable the public and decision-makers to compare the impacts associated with grout-based waste forms against other waste forms addressed in the EIS.*

46. **Comment** - A commentor asserted that grout does not develop proper UCS strength of 115 pounds per square inch, and that curing inhibitors must be added to the grout to neutralize the effects of fluorides, nitrates, and nitrites. The commentor asserted that Native Americans have blocked the grout program's implementation and questioned why it is still in the EIS. (JH)

Response - *Grouting is considered a reasonable technology for stabilization of LLW in the Extensive Retrieval alternative. The TWRS EIS will present analysis that will enable the public and decision-makers to compare the environmental impacts of grout-based waste forms with other waste forms addressed in the EIS.*

47. **Comment** - One commentor supported grout as a technically feasible and cost-effective alternative. (GR)

Response - *Grout will be addressed in the TWRS EIS as a technology for the stabilization of LLW for both storage and disposal under each of the TWRS alternatives. The EIS will present analysis that will enable the public and decision-makers to compare the environmental impacts of grout-based waste forms with other waste forms addressed in the TWRS EIS.*

48. **Comment** - If the grout facility is not being used to process LLW, how will it be treated? (JH)

Response - *Grout will be addressed in the TWRS EIS as a technology for the stabilization of LLW for both storage and disposal under each of the TWRS alternatives. As part of the TWRS EIS, other treatment technologies and required facilities will be assessed.*

49. **Comment** - What will be done with the constructed grout vaults in the 200 East Area? Ten million tax payer dollars were used to construct the vaults in the 1980s. (JH)

Response - *The future need for or use of the existing grout vaults has not been determined. The TWRS EIS will include an evaluation of use of the vaults for storage and or disposal of stabilized LLW. However, the EIS will not address options for the grout facility and related impacts if it is not selected for LLW disposal.*

WASTE CHARACTERIZATION

50. **Comment** - Concern was expressed that characterization methods and laboratories are inadequate to properly perform the needed characterization. Further, much of the characterization data obtained thus far is worthless. Therefore, it would be more cost-beneficial for DOE to examine what needs to be done to improve characterization before proceeding. (EH)

Response - *DOE has an ongoing waste characterization program. The TWRS EIS will examine the quality and sufficiency of existing waste characterization data as it relates to analysis of the TWRS EIS alternatives. The TWRS EIS analysis will proceed using the best available tank waste characterization data. A separate analysis of improvements to the tank waste characterization operation is not within the scope of the TWRS EIS and is in fact an ongoing priority of DOE.*

51. **Comment** - It is a waste of money to combine SST and DST wastes. Little is known about the waste characteristics of SSTs, while DST wastes are well defined. (JH)

Response - *DOE intends to conduct an integrated program to treat, store, and dispose of SST and DST waste. Additional characterization of SST and DST waste is being performed in support of that program.*

WASTE STORAGE RETRIEVAL

52. **Comment** - Options to pumping liquid wastes from SSTs to avoid further leaks should be considered. This would provide additional safety margins. (YIN)

Response - *DOE places a high priority on minimizing the actual or potential release of waste to the environment. Existing operations at the Hanford tank farms involve the pumping of liquid wastes from SSTs that are assumed to have leaked and to minimize the volume of liquid wastes stored in the SSTs. This action is included in the on-going operation of the tank farms. Every alternative considered in the TWRS EIS involves minimizing liquid waste in SSTs and will address prioritization of tanks based on actual or potential releases to the environment.*

53. **Comment** - Some commentors suggested the use of freeze barrier isolation of tank wastes during cleanout operations or in-tank processing should be considered for protection of the vadose zone and the saturated zone. (YIN and JW)

Response - *Environmental impacts that could result from waste retrieval or in-tank treatment or processing of wastes include potential leakage or other releases of contaminants to the environment. For each alternative that involves waste retrieval or in-tank processing, the TWRS EIS will address to what extent measures would be needed in the event of tank leaks during processing or cleanout or to prevent potential leakage or other environmental releases. If it is necessary to control leaks, then the freeze barrier process, along with other reasonable technologies, would be assessed and presented in the TWRS EIS.*

54. **Comment** - How will SST wastes be safely removed and transported to the DST tanks? (JH)

Response - *Waste could be retrieved by pumping, hydraulic sluicing, hydraulic mining, and mechanical-removal or pneumatic-recovery systems. The TWRS EIS will present an analysis for each of these retrieval technologies for review by the public and decision-makers. The retrieved waste could be transferred to the DST tanks, a pretreatment process, or a treatment by pumping the waste slurry through a pipeline or transporting the waste in railcars or trucks. The EIS will present information regarding each of these waste retrieval and transportation technologies and the relative environmental impacts of each.*

55. **Comment** - Development and implementation of an environmentally benign barrier/ containment technology should be addressed. (CTUIR)

Response - *The TWRS EIS will examine the use of barrier and containment technologies during the evaluation of environmental impacts associated with the TWRS EIS alternatives. The examination will include an analysis of the environmental impacts, including impacts to human health and the environment, associated with the alternatives and technologies that may require the use of barrier and containment technology.*

56. **Comment** - Accelerate and expedite development of onsite waste storage/disposal facilities. (CTUIR)

Response - *The TWRS EIS will examine the use of onsite storage and retrievable disposal facilities in the evaluation of alternatives associated with Hanford's tank wastes. This analysis will support review of the environmental impacts associated with onsite storage and retrievable disposal technologies for Hanford's tank waste.*

57. **Comment** - A commentor recommended an analysis of whether tanks can withstand sluicing or other means of retrieval. (GP)

Response - *The TWRS EIS will evaluate the structural integrity of Hanford's tanks to withstand all technologies for tank waste retrieval. The EIS will include an analysis of the ability of individual tanks to withstand in-tank waste conditioning, waste transfer, tank dome gravel back-fill, and retrieval of tank wastes.*

58. **Comment** - Maximize retrieval and treatment of tank sludges and solids. (CTUIR)

Response - *The TWRS EIS will examine the Extensive Retrieval alternative as a planning basis for the retrieval and treatment of the tank wastes, including sludges and solids. This alternative represents the upper bound of the range of alternatives being analyzed in the EIS. Other alternatives are based on lower levels of retrieval (Selective Retrieval) or limited retrieval (Minimal Retrieval) of tank wastes to provide a comprehensive analysis of the full range of reasonable alternatives available to decision-makers and the public. In a similar manner, the level of treatment will vary by alternative. No treatment would occur under the No Action alternative. However, all of the tank wastes would receive some level of treatment under the Extensive Retrieval alternative.*

WASTE TREATMENT

59. **Comment** - A commentor suggested putting the wastes in a breeder reactor or Washington Public Power Supply System reactor and burning them with a result of 30-years of extra power. (RB)

Response - *Hanford tank wastes, as they currently exist, are not suitable for use as an energy source in a nuclear reactor. The TWRS EIS will provide an analysis that will support review of the environmental impacts associated with onsite storage and retrievable disposal technologies for Hanford tank wastes should future technologies be developed for the utilization of these tank wastes as an energy source.*

60. **Comment** - One commentor suggested using a building that is totally filtered to burn the waste to an ash, thereby making a smaller volume of waste for disposal. (TH)

Response - *The TWRS EIS will evaluate vitrification, which parallels this suggestion. The vitrification process melts waste by using high heat just before it is turned into glass.*

61. **Comment** - Options for processing tank wastes into two waste streams (HLW and LLW), as specified in the TPA, should be considered. (YIN)

Response - *The TWRS EIS will evaluate various advantages and disadvantages involving waste separation, pretreatment, storage, and disposal. One issue assessed will be of the potential environmental impacts and costs associated with a greater volume of HLW waste to be transported to and disposed of in a geologic repository if HLW and LLW streams are not separated.*

62. **Comment** - Several comments dealt with tritiated water and separation of tritium from waste water. (YIN)

Response - *The extent to which tritium may occur in tank waste water will be determined and the potential for impacts on public health and safety will be analyzed in the TWRS EIS. In addition, impacts associated with waste retrieval, pretreatment, separation, treatment, storage, and disposal will be evaluated for each alternative and presented in the TWRS EIS.*

63. **Comment** - The solvent extraction technique worked very well at T-Plant to remove transuranic wastes from the waste stream. (JH)

Response - *Solvent extraction will be considered as a candidate technology for the Selective Retrieval and Extensive Retrieval (Ex Situ Vitrification) alternative to be considered in the EIS. The environmental impacts of the solvent extraction pretreatment option will be presented in a manner that permits comparison of this technology with other pretreatment technologies examined in the TWRS EIS.*

RESOURCE RECOVERY AND WASTE MINIMIZATION

64. **Comment** - Minimization of waste volumes should be considered as an optional design objective. (YIN)

Response - *The TWRS EIS will evaluate tank waste volume minimization for the alternatives analyzed in the EIS. DOE will continue to use waste minimization as a design objective for proposed facilities as well as an objective for ongoing operations at the Hanford Site.*

65. **Comment** - One commentor recommended an investigation of resource value in the wastes. (GD)

Response - *The recovery of valuable energy and other materials from the tank waste will be evaluated in the TWRS EIS Extensive Retrieval alternative. The EIS will address the recovery of valuable resources from the tank wastes as part of the analysis on waste stream separation. This evaluation will examine the segregation of HLW from LLW. Useful and valuable constituents contained within these separated waste streams will be investigated for resource value and recovery.*

66. **Comment** - The capability to recover and provide for further remediation of wastes, if it becomes necessary in the future, should be retained. (RT)

Response - *Retrievable disposal will be addressed in the TWRS EIS for Hanford's tank waste alternatives. As a component of the these alternatives, the EIS will evaluate the environmental impacts and feasibility of onsite retrievable disposal. This analysis will provide for the possibility and future methodology of retrieval of disposed tank wastes onsite should further remediation efforts be required or new technology be developed to facilitate waste resource recovery.*

67. **Comment** - Minimize existing or new waste streams directed toward the tanks. (CTUIR)

Response - *The minimization of wastes generated at DOE facilities is at the forefront of DOE operational objectives. The TWRS EIS will use the Hanford facility's tank waste projections in the evaluation of the TWRS EIS alternatives. The management alternatives will address the projected tank waste volume requirements, tank upgrades required for safe management of the existing tank wastes, and any new tanks required for routine operations.*

68. **Comment** - Use an evaporator to boil-off diluted waste. (MB)

Response - *The TWRS EIS will evaluate evaporation as a tank waste treatment technology.*

69. **Comment** - Millions of dollars have been spent upgrading the 242-A Evaporator. Why is no mention made of this in the EIS? (JH)

Response - *Evaporation is mentioned as an example of conditioning on pages 4053 and 4056 of the Federal Register Notice of Intent. The TWRS EIS will address the environmental impacts associated with the use of an evaporator including the existing 242-A Evaporator.*

70. **Comment** - Direct volume reduction and stabilization of tank wastes by sugar denitrification should be considered in conjunction with dry-cask storage of the resulting salts. (YIN)

Response - *The TWRS EIS will evaluate use of sugar denitrification in the treatment of tank waste, as well as the interim storage of the resultant stable salts in dry-cask storage.*

71. **Comment** - Sodium nitrate, sodium nitrite purification, and sugar denitrification of the purified sodium salts to reduce waste volume with calcination of the remaining waste sludges and salts should be considered as a method of treatment to effect volume reduction. (YIN)

Response - *Volume reduction through the use of sugar denitrification and other salt purification processes will be addressed in the TWRS EIS as a subalternative to the Extensive Retrieval (Ex Situ Vitrification) alternative.*

72. **Comment** - Ion exchange is an excellent choice to concentrate radionuclides and reduce waste volume. (JH)

Response - *Ion exchange will be considered as a waste pretreatment technology in the TWRS EIS. Ion exchange will be presented in a manner that permits comparison of this technology with other pretreatment technologies.*

HEALTH RISK, SAFETY, AND MITIGATION

73. **Comment** - Concern was expressed regarding explosion potential when vitrifying wastes that contain a mixture of chemicals with a nitrogen component. (CL)

Response - *The potential for explosion during the vitrification process, as a result of elevated temperatures of nitrogen-compound containing waste, will be discussed in the TWRS EIS analysis of immobilization technologies. Health and safety issues surrounding the use of existing waste vitrification technology will be evaluated, and all potential concerns and issues regarding explosion possibilities will be determined and presented as part of this discussion.*

74. **Comment** - One commentor proposed berms around tanks to avoid an explosion in a tank, which would result in explosions in other tanks. (EFL)

Response - *The EIS will include an analysis of potential safety and accident scenarios that could be reasonably anticipated for the TWRS EIS alternatives. The analysis will include evaluation of the potential for an individual tank explosion to cause an explosion of another tank or multiple tank explosions. The EIS will evaluate the risks associated with potential accident scenarios for the tanks and determine what, if any, mitigation efforts would remove or significantly reduce the accident potential.*

75. **Comment** - One commentor stated that neptunium-237 needs to be thoroughly evaluated and kept from the environment. (PK)

Response - *The TWRS EIS will evaluate the potential release of neptunium-237 to the environment as well as all other nuclides contained in the tank wastes. The EIS will evaluate*

the health and safety aspects and the environmental risks associated with potential environmental releases of tank waste contaminants. This analysis will determine what, if any, mitigation efforts are necessary to reduce or remove potential risks from an environmental release of tank wastes.

76. **Comment** - A commentor contended that DOE maintains that tank leaks pose no threat to the environment and that such a statement is wrong. The commentor called for an independent assessment. (GP)

Response - *The basis for preparing the TWRS EIS is to analyze the proposed alternatives to alleviate tank leaks at the Hanford Site and reduce the real or perceived risks these leaks may pose to the environment. The environmental risks associated with Hanford's tank leaks will be addressed in the TWRS EIS No Action alternative and other tank waste remediation alternatives. The No Action alternative will evaluate the environmental impacts of tank leaks related to the continued current management of Hanford's tank wastes. The waste retrieval alternatives will evaluate the potential for tank leaks caused by the tank waste retrieval process. The evaluation of environmental impacts associated with existing contaminated soils, groundwater, and the remediation of releases to the soil and groundwater is out of the scope of this EIS. However, these issues may be discussed as part of a separate impact analysis.*

77. **Comment** - Resolve and eliminate tank safety issues associated with criticality potential, flammable gas generation and venting, ferrocyanide explosive potential, organic-nitrate reactivity potential, and high-heat generation. (CTUIR)

Response - *The TWRS EIS will evaluate tank safety issues associated with criticality potential, flammable gas generation and venting, ferrocyanide explosive potential, organic-nitrate reactivity potential, and high-heat generation. These issues and the potential impacts associated with the resolution of these issues will be addressed in the EIS as part of the analysis on cumulative impacts from tank farm operations and management.*

78. **Comment** - Strontium extraction was done with ferrocyanide compounds. Does the EIS address their safe disposition? (JH)

Response - *Yes, the TWRS EIS will address the alternatives for safe disposition of all tank waste constituents.*

EMISSIONS, EFFLUENTS, AND MONITORING

79. **Comment** - Eliminate any use of leaking tanks and SSTs in general. Operational tank leak detection programs should be outlined and considered in the EIS to correct leak detection and tank monitoring deficiencies. (CTUIR, YIN, and JW)

Response - *DOE has implemented an operational program to detect and minimize leaks from existing tanks and to monitor all tanks for leaks. The TWRS EIS will address the discontinued use of SSTs at the Hanford tank farms as part of the EIS alternative evaluation. One purpose of the TWRS EIS is to asses alternatives that will reduce the risks associated with the environmental release of SST and DST wastes.*

80. **Comment** - Trap radioactive gas in activated carbon filters and encase it in lead and stainless-steel containers that are suitable for long-term storage. (TT)

Response - *Radioactive gases would be filtered from exhaust air streams in all processes. The TWRS EIS will investigate the extent by which activated carbon filters could be used to filter these gases. The need for lead or stainless-steel containers and long-term storage, instead of disposal, will be considered in the EIS as part of the analysis on the No Action alternative and those alternatives that evaluate the management, treatment, retrieval, storage, and/or disposal of Hanford's tank wastes.*

81. **Comment** - All options for treatment of waste should include managing gaseous waste rather than discharging to the atmosphere, even in a form diluted with uncontaminated air. Particularly, iodine-129, carbon-14, and tritium should be collected, concentrated, and provided with appropriate disposal. (YIN)

Response - *The TWRS EIS will evaluate the degree to which gaseous effluents (generated during the course of tank waste management) can be remediated by recovery, concentration, and disposal. Radioactive gases will be filtered from exhaust air streams in all processes. The management of gaseous wastes will be analyzed as part of the analysis on the No Action alternative and those alternatives that evaluate the management, treatment, retrieval, and storage or disposal of Hanford's tank wastes.*

82. **Comment** - A commentor called for zero contaminant release to air, water, and groundwater. (RT)

Response - *In the context of waste minimization and pollution prevention, the goal of minimal, if not zero, releases will be pursued for all TWRS activities. Each alternative will be evaluated to determine the extent to which releases to the air, water, soil, and groundwater are associated with implementation of each of the TWRS EIS alternatives.*

83. **Comment** - Tritium releases from the DSTs are not adequately addressed in the EIS. Tritium requires special clays for capture and disposal. Historically, DOE releases high doses of tritium to the water and atmosphere. (JH)

Response - *The issue of possible tritium releases from DSTs will be addressed in the TWRS EIS for all alternatives. DOE's goal of minimal, if not zero, releases will be pursued for all TWRS activities. Each alternative will be evaluated to determine the extent to which releases to the air, water, soil, and groundwater are associated with each of the TWRS EIS alternatives.*

84. **Comment** - Vadose zone monitoring of tank farm solids could provide information for future remediation efforts. The entire tank system, including tank structures and associated vadose zone and groundwater contamination, should be considered in the performance assessments for tank operations and remediation efforts. (YIN)

Response - *The vadose zone has been, and will continue to be, the subject of monitoring. The need for and effectiveness of alternative specific vadose zone monitoring will be addressed in the EIS.*

NATURAL RESOURCES PRESERVATION

85. **Comment** - Environmental assessments prepared by DOE contractors for Hanford projects, to date, have been mostly limited to searches for and lists of State or Federal listed species. The U.S. Department of the Interior feels that this effort is not adequate. The shrub-steppe habitat present at Hanford is considered by both the State of Washington and the U.S. Department of Interior to be of high value on a regional basis. Listed species are only one component of the shrub-steppe habitat. (DOI)

Response - *The evaluation of biological and ecological impacts in the EIS will address a range of relevant issues beyond exclusively TWRS impacts on Washington State or Federal listed species. Impacts on the regional shrub-steppe habitat will be included as part of the environmental impacts analysis for proposed TWRS activities.*

86. **Comment** - It would be useful if habitat variables were assessed in enough detail so that, once a site is chosen, alternatives such as tank configuration within a site can be considered to minimize impacts to higher-quality habitat areas.

The U.S. Department of Interior provides the following suggestions for habitat evaluation, in addition to the previously mentioned surveys of listed species, to support the current site assessment process. The history of disturbance should be determined, and the following habitat variables should be estimated using transect or plot methods: percent cover of cryptogam layer and percent cover of native grasses and forbs versus cheatgrass and quality of the shrub component in terms of diversity and maturity. The EIS should present the results of the habitat evaluation in terms of discussion of relative habitat values at alternative sites, habitat values figured in the site assessment process, and the selection of the preferred site alternative. (DOI)

Response - *DOE and Ecology recognize that contiguous blocks of mature shrub-steppe habitat are important for many plant and animal species, and that this habitat is rapidly shrinking elsewhere in Eastern Washington. DOE is developing a Hanford Sitewide Mitigation Plan in cooperation with the State of Washington Department of Fish and Wildlife and the U.S. Fish and Wildlife Service. The TWRS EIS will identify habitat mitigation needs based on an evaluation of habitat value associated with possible habitat disturbance from the various TWRS EIS alternatives including proposed construction and operational activities. Mitigation measures beyond those already proposed will be identified in the EIS and made more specific in the Mitigation Action Plan. The Mitigation Action Plan will be prepared in consultation with the U.S. Department of Interior, Ecology, other State agencies, and Tribal governments. DOI's concerns will be considered throughout the TWRS EIS process.*

87. **Comment** - The EIS should consider ways to minimize environmental impacts during the construction phase of the project. For example, construction will involve necessary land use such as vehicle parking and stockpiling of materials and excavated soil and rocks. A phased construction plan could allow stockpiling and parking on future tank construction sites, thus avoiding additional vegetation removal. The EIS should also address the fate of excavated material and the environmental impacts associated with disposal. (DOI)

Response - *The TWRS EIS will assess the environmental impacts possible during the construction and operations phases of the project in the analysis of all TWRS alternatives including no action. Mitigation of construction-phase impacts will be considered, as needed, to reduce identified impacts. Impacts associated with excavated material will also be addressed in the EIS. This information will be available to the decision-maker and the public during the decision-making process.*

88. **Comment** - No information was provided on the condition of the land surface following completion of construction activities. If an impervious surface will cover the area, the EIS should cover the potential need for storm-water runoff control. Otherwise, the EIS should provide plans for revegetation of some, or all, of the areas. We suggest revegetation with native grasses and forbs to reduce the cheatgrass infestation. However, restoration of a shrub habitat may not be recommended, as attracting wildlife into a waste management area could result in negative impacts. (DOI)

Response - *The TWRS EIS will address the condition of post-construction land surfaces including the potential need to revegetate any disturbed areas as a result of the TWRS EIS alternatives that would require onsite construction.*

89. **Comment** - A revegetation plan should include a monitoring schedule to determine success of plantings, and criteria which would determine failure and need for additional planting effort. (DOI)

Response - *Revegetation and monitoring would be addressed in a Mitigation Action Plan prepared after the TWRS Final EIS and Record of Decision have been issued. A Mitigation Action Plan (if required) will be developed in consultation with the U.S. Department of Interior, various State agencies, and Tribal governments. This issue with regard to a revegetation plan is out of the TWRS EIS scope. However, the TWRS EIS will address the condition of post-construction land surfaces including the potential need to revegetate any disturbed areas as a result of the TWRS EIS alternatives requiring onsite construction.*

90. **Comment** - Native plant seeds should be from the Columbia Basin area, since these plants are adapted to the local climate and will have a better chance of success. (DOI)

Response - *The choice of plant seeds to be used in any potential revegetation effort as a result of TWRS construction process is not within the scope of the TWRS EIS. However, past revegetation efforts undertaken by DOE have stressed the use of native plant seeds whenever practical. Revegetation and the practicality of using local plant seeds will be addressed in a Mitigation Action Plan (if required) prepared after the TWRS Final EIS and Record of Decision have been issued.*

91. **Comment** - If the site chosen for construction contains mature shrubs, options for transplanting the shrubs into areas undergoing restoration should be examined. (DOI)

Response - *The options for transplanting potentially disturbed shrubs into areas undergoing restoration is not within the scope of the TWRS EIS. However, past revegetation efforts undertaken by DOE have analyzed the use of native plant transplants whenever practical. Revegetation and the practicality of transplanting local plants to areas under restoration will be addressed in a Mitigation Action Plan prepared after the TWRS Final EIS and Record of Decision have been issued*

92. **Comment** - Maximize protection of the Columbia River ecosystem and associated natural and cultural resources. (CTUIR)

Response - *The TWRS EIS will evaluate the environmental impacts each of the alternatives may have on the Columbia River ecosystem and associated natural, cultural, and environmental resources, throughout the discussions of each of the TWRS EIS alternatives.*

No other comments regarding the scope, alternatives, or environmental issues to be addressed in the TWRS EIS were identified.

TWRS EIS SCOPING COMMENT SOURCE KEY IDENTIFICATION

COMMENT SOURCE KEY	COMMENT SOURCE IDENTIFICATION
BC	Barbara Clark
BK	Brian Keele
CA	Carolyn Spear
CD	Cindy deBruler
CL	Curt Leslie
CS	Cynthia Sarthou, Heart of America Northwest
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
DB	Dick Belsy, Physicians for Social Responsibility
DD	Dirk Dunning, Oregon Department of Energy, and Oregon Hanford Waste Board
DOI	Department of Interior
EF	Ed Fredenburg
EFL	Eleanor Fraser Little, God and Physics Unlimited
EH	Eric Hoppe
EMS	Effie Mae Skinner
ET	Edna Thomas
EW	Elizabeth Widdell
GB	Greg deBruler, Columbia River United
GD	Grace Doane
GP	Gerald Pollet, Heart of America Northwest
GR	Gordon Rogers
GS	Gordon Smith
HD	Helen Delaney
HH	Hilary Harding
JH	Jim Hauck
JW	James Whitley
KW	Kip Wilson
LH	Langdon Holton
LP	Larry Penberthy, Paul Revere Organization
MB	Mark Bowman
MS	Mary Shaver, Oregon Hanford Waste Board
PK	Paige Knight, Hanford Watch
RB	Ray E. Bailey
RK	Robin Klein
RS	Roark Smith
RT	Ross Tewksbury

TWRS EIS SCOPING COMMENT SOURCE KEY IDENTIFICATION (cont'd)

COMMENT SOURCE KEY	COMMENT SOURCE IDENTIFICATION
SC	Sean Colby
TH	Terry Hendrickson
TM	Todd Martin, Hanford Education Action League
TT	Tom Tucker
TP	Theresa Potts, Hanford Education Action League
WB	Wayne Bloomster
YIN	Confederated Tribes and Bands of the Yakama Indian Nation

APPENDIX E
Contractor Disclosure Statements

Contractors and subcontractors preparing an Environmental Impact Statement (EIS) are required to execute a disclosure statement specifying that they have no financial or other interest in the outcome of the project (40 CFR 1506.5[c]). Jacobs Engineering Group Inc. (Jacobs) is the prime contractor for preparation of the Tank Waste Remediation System EIS. Jacobs is joined in the effort by subcontractors Advanced Sciences, Inc., Environmental Sciences and Engineering, Inc., and PMC\Solutions, Inc.

U.S. Department of Energy Contract Number DE-AC06-94RL12636
National Environmental Policy Act Disclosure Statements for Preparation of the
Tank Waste Remediation System Environmental Impact Statement
The U.S. Department of Energy Richland Operations Office

The Council on Environmental Quality (CEQ) Regulations at 40 CFR 1506.5(c), which have been adopted by the U.S. Department of Energy (DOE) (10 CFR 1021), require contractors who will prepare an Environmental Impact Statement (EIS) to execute a disclosure specifying that they have no financial or other interest in the outcome of the project. The term "financial interest or other interest in the outcome of the project" for purposes of this disclosure is defined in the March 23, 1981, guidance "Forty Most Asked Questions Concerning CEQ's, National Environmental Policy Act Regulations," 46 FR 18026-18038 at Questions 17a and b.

"Financial or other interest in the outcome of the project" includes "any financial benefit such as a promise of future construction or design work on the project, as well as indirect benefits the consultant is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients)," 46 FR 18026-18038 at 18031.

In accordance with these requirements, Jacobs Engineering Group Inc. hereby certifies that it has no financial or other interests in the outcome of the project.

Certified by: _____
(Signature)
Sanford W. Hedrick,
Director, Contracts Management Group

_____
(Date)

U.S. Department of Energy Contract Number DE-AC06-94RL12636
National Environmental Policy Act Disclosure Statements for Preparation of the
Tank Waste Remediation System Environmental Impact Statement
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"Financial or other interest in the outcome of the project" includes "any financial benefit such as a promise of future construction or design work on the project, as well as indirect benefits the consultant is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients)," 46 FR 18026-18038 at 18031.

In accordance with these requirements, Advanced Sciences, Inc. hereby certifies that it has no financial or other interests in the outcome of the project.

Certified by: _____
(Signature)
Reed Kaldor,
Project Director

_____
(Date)

U.S. Department of Energy Contract Number DE-AC06-94RL12636
National Environmental Policy Act Disclosure Statements for Preparation of the
Tank Waste Remediation System Environmental Impact Statement
The U.S. Department of Energy Richland Operations Office

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"Financial or other interest in the outcome of the project" includes "any financial benefit such as a promise of future construction or design work on the project, as well as indirect benefits the consultant is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients)," 46 FR 18026-18038 at 18031.

In accordance with these requirements, Environmental Sciences and Engineering, Inc. hereby certifies that it has no financial or other interests in the outcome of the project.

Certified by: _____
(Signature)
Stephen J. Haverl,
Vice President

_____
(Date)

U.S. Department of Energy Contract Number DE-AC06-94RL12636
National Environmental Policy Act Disclosure Statements for Preparation of the
Tank Waste Remediation System Environmental Impact Statement
The U.S. Department of Energy Richland Operations Office

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"Financial or other interest in the outcome of the project" includes "any financial benefit such as a promise of future construction or design work on the project, as well as indirect benefits the consultant is aware of (e.g., if the project would aid proposals sponsored by the firm's other clients)," 46 FR 18026-18038 at 18031.

In accordance with these requirements, PMC\Solutions, inc. hereby certifies that it has no financial or other interests in the outcome of the project.

Certified by: _____
(Signature)
James E. Rodriguez,
Richland Operations Manager

_____
(Date)

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APPENDIX F
Federal and Washington State Laws and Regulations

Federal and Washington State laws and regulations that the Tank Waste Remediation System (TWRS) Environmental Impact Statement (EIS) must consider during the evaluation of alternatives are identified in Table 1.3. A brief summary of each relevant law and regulation is provided in this appendix.

F.1.0 FEDERAL ENVIRONMENTAL STATUTES AND REGULATIONS

National Environmental Policy Act of 1969, as amended
(42 United States Code [USC] §4321 et seq.)
The National Environmental Policy Act (NEPA) establishes a national policy to promote awareness of the environmental consequences from human activities on the environment and consideration of potential environmental impacts during the planning and decision-making stages of proposed Federal actions. NEPA requires all Federal Government agencies to prepare a detailed statement on the potential environmental effects that a major proposed Federal action may have on the quality of the human environment.

The TWRS EIS will be prepared in response to those NEPA requirements and policies. The EIS will identify reasonable alternatives for the proposed action and the potential environmental consequences of each alternative. The EIS will be prepared in accordance to the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA in Title 40 Code of Federal Regulations (CFR) Parts 1500 through 1508 and U.S. Department of Energy (DOE) NEPA Implementing Procedures (10 CFR Part 1021).

Atomic Energy Act of 1954, as amended (42 USC §2011 et seq.)
The Atomic Energy Act authorizes DOE to establish standards to protect health or minimize dangers to life or property with respect to activities under DOE's jurisdiction. Through a series of DOE Orders, an extensive system of standards and requirements has been established to ensure safe operation of facilities. These requirements and standards are detailed in Section 6.1.4. The U.S. Nuclear Regulatory Commission also has regulatory responsibilities under the Atomic Energy Act for establishing standards for the commercial disposal of radioactive waste. Under authority of the Atomic Energy Act, the U.S. Environmental Protection Agency has implemented standards for managing and disposing of spent nuclear fuel, high-level waste, and transuranic waste (40 CFR Part 191).

Clean Air Act, as amended (42 USC §7401 et seq.)
The Clean Air Act is intended to "protect and enhance the quality of the nation's air resources so as to promote public health and welfare and the productive capacity of its population." Section 118 of the Clean Air Act requires that each Federal agency with jurisdiction over any property or facility that

might result in the discharge of air pollutants comply with all Federal, State, interstate, and local requirements regarding the control and abatement of air pollution.

The Clean Air Act requires the U.S. Environmental Protection Agency to establish National Ambient Air Quality Standards to protect public health, with an adequate margin of safety, from any known or anticipated adverse health effects of a regulated pollutant (42 USC §7409). The Clean Air Act also requires establishing national standards of performance for new or modified stationary sources of atmospheric pollutants (42 USC §7411) and requires permitting of specific emission increases to prevent a significant deterioration in air quality (42 USC §7470). Hazardous air pollutants, including radionuclides, are regulated separately (42 USC §7412). Air emissions are regulated by the U.S. Environmental Protection Agency in 40 CFR Parts 50 through 99. In particular, radionuclide emissions are regulated by the U.S. Environmental Protection Agency under the National Emission Standard for Hazardous Air Pollutants Program (40 CFR Part 61).

Safe Drinking Water Act, as amended (42 USC §300f et seq.)

The primary objective of the Safe Drinking Water Act is to protect the quality of the public water supplies and all sources of drinking water. The implementing regulations, which are administered by the U.S. Environmental Protection Agency unless delegated to the States, establish standards applicable to public water systems. Public water systems are defined as water systems that serve at least 15 service connections used by year-round residents or regularly serve at least 25 year-round residents. These regulations establish maximum contaminant levels (including those for radioactivity) in public water systems. The Safe Drinking Water Act requirements have been implemented by the U.S. Environmental Protection Agency in 40 CFR Parts 100 through 149. Other programs established by the Safe Drinking Water Act include the Sole Source Aquifer Program, the Wellhead Protection Program, and the Underground Injection Control Program.

Clean Water Act, as amended (33 USC §1251 et seq.)

The Clean Water Act, which amended the Federal Water Pollution Control Act, was enacted to "restore and maintain the chemical, physical, and biological integrity of the nation's water." The Clean Water Act regulates the discharge of pollutants to navigable waters of the United States. Section 313 of the Clean Water Act requires all branches of the Federal government, engaged in any activity that might result in a discharge or runoff of pollutants to surface waters, to comply with Federal, State, interstate, and local requirements.

The Clean Water Act establishes guidelines and limitations for effluents from point-source discharges and authorizes the U.S. Environmental Protection Agency, to implement the National Pollutant Discharge Elimination System permitting program. The National Pollutant Discharge Elimination System program is administered by the Water Management Division of the U.S. Environmental Protection Agency pursuant to regulations in 40 CFR Part 122 et seq. National Pollutant Discharge Elimination System permits, except for stormwater permits, that are required for the Hanford Site are

obtained by DOE through the Washington State Department of Ecology (Ecology). Relevant Federal regulations are found in 40 CFR Part 122 et seq.

Resource Conservation and Recovery Act, as amended (42 USC §6901 et seq.)
The treatment, storage, and disposal of hazardous and nonhazardous waste are regulated under the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (RCRA), the Hazardous and Solid Waste Amendments of 1984, and the Federal Facility Compliance Act, which are discussed separately from RCRA in this section. The U.S. Environmental Protection Agency has delegated the enforcement of Hazardous and Solid Waste Amendments to Ecology. The U.S. Environmental Protection Agency regulations implementing RCRA are found in 40 CFR Parts 260 through 280.

Comprehensive Environmental Response, Compensation, and Liability Act, as amended (42 USC 9601 et seq.)
The Comprehensive Environmental Response, Compensation, and Liability Act provides a statutory framework for the cleanup of waste sites containing hazardous substances and, as amended by the Superfund Amendments and Reauthorization Act, provides an emergency response program in the event of a release or threat of release of a hazardous substance to the environment. Using the Hazard Ranking System, Federal and private sites are ranked and may be included on the National Priorities List. The Comprehensive Environmental Response, Compensation, and Liability Act requires such Federal facilities having such sites to undertake investigations and remediation as necessary. The Comprehensive Environmental Response, Compensation, and Liability Act also includes requirements for reporting releases of certain hazardous substances in excess of specified amounts to State and Federal agencies. The Comprehensive Environmental Response, Compensation, and Liability Act could apply to TWRS in the event of a release of hazardous substances to the environment. The implementing regulations for the Comprehensive Environmental Response, Compensation, and Liability Act are found in 40 CFR Part 300.

Federal Facility Compliance Act (42 USC §6921 et seq.)
The Federal Facility Compliance Act, enacted on October 6, 1992, waives sovereign immunity for RCRA violations at Federal facilities. However, a provision of the act postpones this waiver for mixed waste storage prohibition violations at DOE sites. Instead, DOE is required to prepare Site Treatment Plans for developing required treatment capacity for mixed waste stored or generated at each facility unless a State-enforceable agreement for RCRA compliance is put into effect. The Federal Facility Compliance Act provides that DOE will not be subject to fines and penalties for violating prohibitions on land disposal restrictions for mixed waste as long as it is in compliance with an approved Site Treatment Plan and meets all other applicable regulations. The Hanford Federal Facility Agreement and Consent Order, also known as the Tri-Party Agreement, between Ecology, the U.S. Environmental Protection Agency, and DOE constitutes a State-enforceable agreement that meets the Federal Facility Compliance Act requirements (Tri-Party Agreement 1994).

National Historic Preservation Act, as amended (16 USC §470 et seq.)
The National Historic Preservation Act requires that sites with significant national historic value be placed on the National Register of Historic Places. There are no permits or certifications required under the National Historic Preservation Act. However, if a Federal activity may impact a historic property resource, consultation is required with the President's Advisory Council on Historic Preservation. The consultation will normally generate a Memorandum of Agreement including stipulations that must be followed to minimize adverse impacts. Coordination with the State Historic Preservation Officer is also part of the consultation process undertaken to ensure that potentially significant sites are properly identified and appropriate mitigative actions are implemented.

Archaeological Resource Protection Act, as amended (16 USC §470 aa et seq.)
The Archaeological Resource Protection Act provides for the preservation of historical and archaeological data (including relics and specimens) that might otherwise be irreparably lost or destroyed from flooding, building of access roads, erecting of workmen's communities, relocating railroads and highways, and other alterations of the terrain caused by constructing of a dam, by any agency of the United States, or by any private person or corporation holding a license issued by any such agency or any alteration of the terrain caused as a result of any Federal agency. If a Federal agency finds that its activities may cause irreparable loss or destruction of significant scientific, prehistorical, historical, or archaeological data, the agency must notify the U.S. Department of Interior and may request the Department to undertake the recovery, protection, and preservation of such data. This Act requires a permit for excavating or removing archaeological resources from public or Tribal lands. Excavations must be undertaken for the purpose of furthering archaeological knowledge in the public interest and resources removed remain the property of the U.S.

American Indian Religious Freedom Act of 1978 (42 USC §1996)
The American Indian Religious Freedom Act was enacted to protect and preserve the rights of Native Americans to believe, express, and exercise their traditional religions. The Act also requires that Federal actions avoid interfering with access of Native Americans to sacred locations and traditional resources that are integral to the practice of traditional religions.

Native American Graves Protection and Repatriation Act of 1990 (25§3001)
The Native American Graves Protection and Repatriation Act established Federal agency responsibility for inventories and summaries of cultural items, including associated funerary objects, unassociated funerary objects, sacred objects, and items of cultural patrimony, held in federal collections. Agencies are also provided procedural directions for planned excavation when such cultural items may be present or discovered.

Endangered Species Act, as amended (16 USC §1531 et seq.)
The Endangered Species Act is intended to prevent the further decline of endangered and threatened species and to restore these species and their habitats. The Endangered Species Act is jointly administered by the U.S. Department of Commerce and the U.S. Department of Interior. Section 7 of

the Endangered Species Act requires Federal agencies proposing action to consult with the U.S. Fish and Wildlife Service to determine whether endangered and threatened species or their critical habitats are known to be in the vicinity of the proposed action.

Migratory Bird Treaty Act, as amended (16 USC §703 et seq.)
The Migratory Bird Treaty Act is intended to protect birds that have common migration patterns between the U.S. and Canada, Mexico, Japan, and Russia. This Act regulates the harvest of migratory birds by specifying things such as the mode of harvest, hunting seasons, and bag limits. Federal agencies proposing action are required to consult with the U.S. Fish and Wildlife Service regarding impacts to migratory birds and to evaluate ways to avoid or minimize impacts in accordance with U.S. Fish and Wildlife Service Mitigation Policy.

Bald and Golden Eagle Protection Act, as amended (16 USC §668-668d)
The Bald and Golden Eagle Protection Act makes it unlawful to take, pursue, or disturb bald (American) and golden eagles, their nests, or their eggs anywhere in the United States (Section 668, 668c). A permit must be obtained from the Department of Interior to relocate a nest that interferes with resource development or recovery operations.

Wild and Scenic Rivers Act, as amended (16 USC §1271 et seq. §71:8301 et seq.)
The Wild and Scenic River Act was enacted to protect certain selected rivers that possess outstanding scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values. These rivers are to be preserved in a free-flowing condition to protect water quality and other conservation purposes. The Act authorizes creating a national wild and scenic rivers system, designating initial rivers that are a part of that system, and developing standards for the addition of new rivers to the system.

Occupational Safety and Health Act of 1970, as amended (29 USC §651 et seq.)
The Occupational Safety and Health Act establishes standards to enhance safe and healthful working conditions in places of employment throughout the U.S. The Act is administered and enforced by the Occupational Safety and Health Administration and the U.S. Department of Labor. While the Occupational Safety and Health Administration and U.S. Environmental Protection Agency both have mandates to reduce exposures to toxic substances, the Occupational Safety and Health Administration's jurisdiction is limited to safety and health conditions in the workplace environment.

Noise Control Act of 1972, as amended (42 USC §4901 et seq.)
Section 4 of the Noise Control Act of 1972 directs all Federal agencies to carry out "to the fullest extent within their authority" programs within their jurisdictions in a manner that furthers the national policy of promoting an environment free from noise that jeopardizes health and welfare.

Emergency Planning and Community Right-to-Know Act of 1986 (42 USC §11001 et seq.) (also known as Superfund Amendments and Reauthorization Act [SARA] Title III)
Under Subtitle A of this Act, Federal facilities, including those owned by the DOE, provide various information, such as inventories of specific chemicals used or stored and releases that occur from these sites, to the State Emergency Response Commission and to the Local Emergency Planning Committee to ensure that emergency plans are sufficient to respond to unplanned releases of hazardous substances.

Nuclear Waste Policy Act (42 USC §10101 et seq.).
The Nuclear Waste Policy Act authorizes Federal agencies to develop a geologic repository for disposing high-level radioactive waste and spent nuclear fuel from commercial reactors. The Act specifies the process for selecting a repository site and constructing, operating, closing, and decommissioning the repository. The law also establishes programmatic guidance for these activities.

Pollution Prevention Act of 1990 (42 USC §13101 et seq.).
The Pollution Prevention Act of 1990 establishes a national policy for waste management and pollution control that focuses first on source reduction, followed sequentially by environmentally safe recycling, treatment, and disposal. Disposal or releases to the environment should only occur as a last resort. The DOE requires each site to establish site-specific goals to reduce generation of all waste types.

F.2.0 STATE OF WASHINGTON ENVIRONMENTAL STATUTES AND REGULATIONS

State of Washington environmental requirements applicable to the proposed action and alternatives to be addressed in the EIS are administered by Ecology and the Washington State Department of Health. These requirements are discussed as follows.

Washington State Environmental Policy Act (Chapter 43.21C Revised Code of Washington)
Washington State Environmental Policy Act (SEPA) and its implementing regulations (Washington Administrative Code 197-11) require that any State of Washington agency proposing an action that might significantly affect the environment evaluate all reasonable alternatives and their potential environmental impacts before taking any action. Because SEPA and NEPA (Section 6.1.1) are comparable in their purpose, intent, and procedures, Ecology and DOE are co-preparing this DEIS in compliance with the requirements of SEPA and NEPA.

Hazardous Waste Management Act (Chapter 70.105 Revised Code of Washington)
The Hazardous Waste Management Act and its implementing regulations (Washington Administrative Code 173-303) apply to the management of all dangerous waste and mixed wastes at the Hanford Site. The U.S. Environmental Protection Agency has delegated the RCRA base program to Ecology, which gives Ecology the authority to regulate mixed waste in Washington State. The Tri-Party Agreement provides the framework for applying the State's requirements for dangerous waste treatment, storage, and disposal units at the Hanford Site. Washington Administrative Code Part 173-303 specifies requirements for design, permitting, operation, and closure of mixed waste tanks.

Washington Clean Air Act (Chapter 70.94 Revised Code of Washington)
Ecology regulates releases of non-radioactive pollutants and Washington State Department of Health regulates radioactive pollutants to the air under the Washington Administrative Code Parts 173-400 and 173-460. These regulations require that new sources of toxic air pollutants comply with quantification requirements and best available control technologies for potential toxic releases to the environment.

Water Pollution Control Act (Chapter 90.48 Revised Code of Washington)
The Water Pollution Control Act and its implementing regulations (Washington Administrative Code Parts 173-200 and 173-216) require that 1) a permit be obtained for any discharge to the soil column and 2) require that the quality of the groundwater in the vicinity be protected and not degraded. Protecting groundwater quality involves applying "all known, available, and reasonable methods of prevention, control, and treatment" to protect groundwater. Both toxic pollutants and radionuclides are included in the groundwater quality standards for the State. The Washington Administrative Code Part 173-201A establishes surface water quality standards for the State of Washington and requires that toxic substances that have the potential to adversely affect water uses not be introduced into surface waters of the State above natural background levels. The State of Washington has been delegated authority for the National Pollutant Discharge Elimination System program which regulates industrial point source discharges to water of the U.S. (Washington Administrative Code Part 173-220). Washington Administrative Code Part 173-226 provides the basis for a general waste discharge permit program for the State. The Washington Administrative Code Part 173-226-100 prohibits the discharge of any high-level radioactive water into State waters.

F.3.0 EXECUTIVE ORDERS

Executive Order 11514 (Protection and Enhancement of Environmental Quality)
Executive Order 11514 requires Federal agencies to continually monitor and control their activities to protect and enhance the quality of the environment. This Order also requires that procedures be developed to ensure the fullest practicable provision of public information and understanding of Federal plans and programs involving environmental impacts and to obtain the views of interested parties. DOE has issued 10 CFR Part 1021 and DOE Order 5440.1E for compliance with this Executive Order.

Executive Order 11988 (Floodplain Management)
Executive Order 11988 requires Federal agencies to establish procedures to ensure that the potential effects of flood hazards and floodplain management are considered for any action undertaken in a floodplain. Executive Order 11988 also requires floodplain impacts be avoided to the extent practicable.

Executive Order 11990 (Protection of Wetlands)
Executive Order 11990 requires governmental agencies to avoid any short- and long-term adverse impacts on wetlands wherever there is a practicable alternative.

Executive Order 12856 (Right-to-Know Laws and Pollution Prevention Requirements)
Executive Order 12856 requires all Federal agencies to reduce the toxic chemicals entering any waste stream. The Order also requires Federal agencies to report toxic chemicals entering waste streams, improve emergency planning, response, and accident notification, and encourage clean technologies and testing of innovative prevention technologies.

Executive Order 12898 (Environmental Justice)
Executive Order 12898 requires Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. Environmental justice issues will be addressed in the TWRS EIS in the affected environment (Section 4.0), environmental consequences (Section 5.0), regulatory compliance (Section 6.0), and scoping, public participation, and consultations sections (Section 7.0).

F.4.0 DOE REGULATIONS AND ORDERS

Through the authority of the Atomic Energy Act, DOE is responsible for establishing a comprehensive health, safety, and environmental program for its facilities. DOE regulations and orders are the regulatory mechanisms used to manage DOE facilities. A wide variety of DOE Orders are applicable to designing, constructing, and operating any facility to remediate the tank wastes and cesium and strontium capsules.

DOE regulations are generally found in Title 10 of the Code of Federal Regulations. For purposes of the TWRS EIS, relevant regulations include 10 CFR Part 834, Radiation Protection of the Public and the Environment; 10 CFR Part 835, Occupational Radiation Protection; 10 CFR Part 1021, Compliance with NEPA; and 10 CFR Part 1022, Compliance with Floodplains/Wetlands Environmental Review Requirements.

DOE has developed a uniform system of communicating policy and procedures to its employees. The system is based on administrative directives, or DOE Orders, which contain information on procedures, responsibilities, and authorities for performing DOE's various functions.

DOE Order 5480.1B, Environmental, Safety, and Health Program for DOE Operations
DOE policy states that the Department will comply with all applicable Federal and State standards. In the event of conflicts between prescribed and recommended standards, those providing the greatest protection apply. DOE Order 5480.1B provides radiation-protection standards for occupational and nonoccupational exposures, guidance on keeping exposures as low as reasonably achievable, and concentration guides for airborne contaminants, liquid effluents, and drinking water. This Order also establishes exposure standards aimed at achieving dose rates for individuals and population groups in uncontrolled areas and monitoring requirements for DOE operations.

DOE Order 5820.2A, Radioactive Waste Management

This Order establishes policies, guidelines, and minimum requirements for managing radioactive or mixed waste facilities. Specific requirements include the following limits: 1) external exposure to waste and concentrations of radioactive material that may be released into surface water, groundwater, soil, plants, or animals but is limited to an effective dose equivalent not to exceed 25 millirems/per year to any member of the public; 2) atmospheric releases are required to comply with the limits specified in 40 CFR Part 61 (EPA 1989b); and 3) limits are imposed on the committed effective dose received by an individual after 100 years, when there is an assumed loss of active institutional control.

DOE Order 5484.1, Environmental Protection, Safety, and Health Protection Information Reporting Requirements

This Order establishes the requirements and procedures for reporting information having environmental protection, safety, or health protection significance for DOE operations.

F.5.0 FEDERAL TRANSPORTATION REGULATIONS

In addition to the packaging and transportation requirements set out in DOE Orders, offsite shipping of radioactive materials is regulated by the Nuclear Regulatory Commission and U.S. Department of Transportation. Table F.1 summarizes the applicable Federal regulations for transportation of nuclear material.

Table F.1 Summary of Major Federal Transportation Requirements

Agency	Regulation	Topic
Nuclear Regulatory Commission	10 CFR Part 71	Packaging of radioactive material for transport and transportation of radioactive material under certain conditions.
Department of Transportation	49 CFR Part 171	General information, regulations, and definitions.
Department of Transportation	49 CFR Part 172	Hazardous materials tables and hazardous material communications regulations.
Department of Transportation	49 CFR Part 173	General requirements for shippers for shipment and packaging.
Department of Transportation	49 CFR Part 173	Carriage by rail.
Department of Transportation	49 CFR Part 177	Carriage by public highway.
Department of Transportation	49 CFR Part 178	Shipping container specifications.

F.6.0 TRI-PARTY AGREEMENT

The Tri-Party Agreement governs and regulates cleanup plans for the Hanford Site. It establishes an action plan for cleanup that contains priority actions, problems, and milestones. The Tri-Party Agreement sets milestones to achieve coordinated cleanup of the Hanford Site and provides and uses these enforceable milestones to keep the program on schedule. The Tri-Party Agreement also establishes the applicability of RCRA and the Comprehensive Environmental Response, Compensation, and Liability Act and their amendments to the Hanford Site.

The Tri-Party Agreement, signed by DOE, Ecology, and U.S. Environmental Protection Agency on May 14, 1989, is an agreement to cleanup radioactive and hazardous waste at the Hanford Site over a 30-year period. In January 1994, this agreement was modified to incorporate the TWRS program as envisioned at that time. The Tri-Party Agreement contains tank-waste specific requirements with which DOE has committed to comply. These tank farm specific requirements are being assessed in the TWRS DEIS and compared to other alternatives for tank waste remediation as well as the No Action alternative.

The major requirements of the Tri-Party Agreement schedule related to TWRS are shown in Table F.2.

Table F.2 Tri-Party Agreement Schedule Tank Waste Milestones

Milestone	Date
Begin construction of LLW vitrification facility	1997
Begin construction of pretreatment and LLW processing facility	1998
Complete characterization of tank waste	1999
Complete interim stabilization of SSTs by removing all pumpable liquid	2000
Resolve tank safety issues	2001
Start construction of HLW vitrification plant	2002
Complete construction of pretreatment and LLW processing facility	2004
Complete tank farm upgrades	2005
Complete construction of LLW vitrification facility	2005
Complete construction of HLW vitrification plant	2009
Complete retrieval of waste from SSTs	2018
Complete closure of all SSTs	2024
Complete tank waste remediation	2028

APPENDIX G

Planning and National Environmental Policy Act Documents

U.S. Department of Energy (DOE) planning and the National Environmental Policy Act (NEPA) documents that the Tank Waste Remediation System (TWRS) Environmental Impact Statement (EIS) must consider during the evaluation of alternatives and assessment of environmental impacts are identified in Figure 1.4. A brief summary of each document is provided in this appendix.

- **The Environmental Restoration and Waste Management Site-Specific Plan for the Richland Operations Office (Hanford Site-Specific Plan).** This document presents the plan for implementing and supporting the national strategy at the Hanford Site, including activities governed by the Tri-Party Agreement (TPA). The TWRS EIS will incorporate, by reference, activities planned for Hanford as part of the affected environment and cumulative environmental impacts section.

- **The Hanford Mission Plan.** The Hanford Mission Plan summarizes the plan for achieving cleanup of the Hanford Site. The purpose of this plan is to provide direction for more detailed planning activities and to communicate the range of technical strategies for Site remediation to Hanford Site management and staff, regulators, and the public. It presents an integrated management approach for the Site as a whole. It also provides plans for the individual mission areas, such as research and Site support. Wherever possible, the Mission Plan identifies potential courses of action for implementation, where major decisions are scheduled in the future or where major issues impede the development of such courses of action, and describes initiatives to obtain the necessary information relevant for decision-making. The Mission Plan is updated annually. The TWRS EIS will incorporate, by reference, activities planned for Hanford as part of the affected environment and cumulative environmental impacts section.

- **Hanford Site Development Plan.** The Site Development Plan provides an overview of the land-use, infrastructure, and facility requirements needed to support DOE programs at the Hanford Site. The primary purpose of the Site Development Plan is to inform senior managers and interested parties of development activities and issues that require a commitment of resources to support the Hanford Site. The plan is updated annually as future decisions shape the mission and overall Site development process. The TWRS EIS will incorporate, by reference, activities planned for Hanford as part of the affected environment and cumulative environmental impacts section.

A number of NEPA documents, either completed or in preparation, are relevant to the TWRS EIS. These include the following EISs.

- **Final EIS, Disposal of Hanford Defense High-Level, Transuranic, and Tank Wastes (HDW EIS), Hanford Site, Richland, Washington, DOE/EIS-113, Vol. 1, 2, 3, 4, and 5, December 1987, DOE, Washington, DC.** In December 1987, DOE completed the Hanford Defense Waste EIS. This EIS addressed the environmental consequences of alternatives for disposal of wastes generated during national defense activities and stored at the Hanford Site. In April 1988, the Record of Decision was issued and it formed the basis for DOE's program to manage these wastes at the Hanford Site. In the Hanford Defense Waste Record of Decision, DOE deferred decisions on final disposal of the tank waste contained in single-shell tanks (SSTs), pending further evaluation in a supplemental EIS. To meet regulatory requirements, DOE's proposed strategy is to retrieve SST waste and to integrate double-shell tank (DST) and SST waste management activities leading to final disposal. Because DOE now proposes to integrate the SST and DST waste management program, the TWRS EIS will replace the previously planned supplement to the Hanford Defense Waste EIS. Where applicable, analysis from the Hanford Defense Waste EIS will be incorporated into the TWRS EIS.

- **Safe Interim Storage of Hanford Tank Waste (SIS) EIS.** The Notice of Intent (59 FR 4052, January 28, 1994) for the TWRS EIS included the SIS EIS as an interim action to the TWRS EIS. The SIS Draft EIS (July 1994) addresses DOE's and the Washington State Department of Ecology's proposal to construct new tanks needed to resolve safety issues, construct a cross-site transfer system, and other related facilities. DOE and Ecology plan to complete this EIS in 1995. The TWRS EIS will incorporate, by reference, analysis completed in the SIS EIS regarding the affected environment, direct and cumulative environmental impacts, and supporting documentation.

- **Hanford Remedial Action EIS.** The Hanford Remedial Action EIS assesses the potential environmental consequences of alternatives for conducting a remedial action program for inactive hazardous, high- and low-level radioactive, transuranic, and mixed-waste sites at the Hanford Site. DOE published a Notice of Intent to prepare the Hanford Remedial Action EIS on August 27, 1992 (47 FR 37959-37964) and intends to issue the draft Hanford Remedial Action EIS in 1995. The TWRS EIS will incorporate, by reference, analysis completed in the Hanford Remedial Action EIS regarding the affected environment, direct and cumulative environmental impacts, and supporting documentation.

- **Environmental Management Programmatic EIS (EM-PEIS).** The EM-PEIS will evaluate the proposed action of formulating and implementing an integrated waste management program. DOE published the Notice of Intent on October 22, 1990 to prepare the EM-PEIS (55 FR 42633) and issued the Implementation Plan in February 1992. In July 1993, DOE published a revised Notice of Intent stating the intent to issue a revised Implementation Plan

based on that Notice of Intent and the draft EM-PEIS in May 1995. The TWRS EIS will incorporate, by reference, activities planned for Hanford as part of the affected environment and cumulative environmental impacts section.

- **Stockpile Stewardship and Management Programmatic EIS (PEIS).** In February 1991, DOE published a Notice of Intent to announce its intent to prepare the Reconfiguration Programmatic EIS. The PEIS was to analyze proposals to reconfigure the nuclear weapons complex to a small, less expensive, more efficient operation and to decide on the technology and site selection for new tritium supply and recycling facilities. On October 28, 1994, DOE issued a Notice to Separate (59 FR 54175) to announce that it would divide the planned Reconfiguration Programmatic EIS into two separate PEISs: a Stockpile Stewardship and Management PEIS (described here) and a Tritium Supply and Recycling PEIS. The Stockpile PEIS includes activities required to maintain a high level of confidence in the safety, reliability, and performance of nuclear weapons and the maintenance, evaluation, repair, or replacement of weapons in the existing stockpile. DOE intends to hold public meetings in 1995 to determine the scoping process for this PEIS and to have preliminary discussions on potential alternatives. The schedule for issuing the Implementation Plan, draft PEIS, and other decision documents has not been announced. The TWRS EIS will incorporate, by reference, activities planned for Hanford as part of the affected environment and cumulative environmental impacts section.

- **Foreign Research Reactor EIS.** This EIS addresses the adoption and implementation of a policy to accept and manage, in the United States, spent nuclear fuel containing uranium that was enriched in the United States. In October 1993, the Notice of Intent was issued. The EIS Implementation Plan was released in October 1994. The Draft EIS is planned for release in April 1995 and the Final EIS was released in April 1995 (60 FR 19899). One of the implementation alternatives is the management of spent nuclear fuels at one or more DOE sites. Hanford is one of five DOE sites under consideration. The TWRS EIS will incorporate, by reference, activities planned for Hanford as part of the affected environment and cumulative environmental impacts section.

- **Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs EIS.** This EIS addresses alternative approaches for managing spent nuclear fuel for 40 years. In October 1992, the Notice of Intent was issued for this EIS. The Notice of Intent was subsequently revised and re-issued on September 3, 1993 and the EIS Implementation Plan was released in October 1993. The Draft EIS was released for public comment in June 1994 and the Final EIS was released in April 1995 (60 FR 20979). One of the implementation alternatives is the management of spent nuclear fuels at one or more DOE sites. Hanford is one of five DOE sites under consideration. The TWRS EIS will incorporate, by reference, activities planned for Hanford as part of the affected environment and cumulative environmental impacts section.

- **Fissile Materials Programmatic EIS (PEIS).** This PEIS addresses alternative approaches for managing long-term storage of all weapons-usable fissile materials and disposition of surplus fissile materials (primarily plutonium) resulting from the reductions in nuclear weapons. On June 21, 1994 the Notice of Intent was issued for this PEIS. The draft PEIS is scheduled to be completed in late 1995 and the Final EIS and Record of Decision are scheduled for completion in 1996. One of the alternative sites for the long-term storage is the Hanford Site. The TWRS EIS will incorporate, by reference, activities planned for Hanford as part of the affected environment and cumulative environmental impacts section.

- **Cleanout and Deactivate the Plutonium Finishing Plant EIS.** This EIS addresses alternative approaches for cleaning out the Plutonium Finishing Plant complex and stabilizing, for storage, the reactive residues and other materials remaining in the complex when production ended in 1989. On October 27, 1994 the Notice of Intent was issued for this EIS. The Draft EIS is scheduled to be completed in late 1995 and the Final EIS and Record of Decision are scheduled for completion in 1996. The TWRS EIS will incorporate, by reference, activities planned for Hanford as part of the affected environment and cumulative environmental impacts section.

- **Management of Spent Nuclear Fuel Currently Stored in the K-Basins EIS.** This EIS will address alternative approaches to the safe management of spent fuels stored in Hanford's K-Basins. The Notice of Intent was published for this EIS on March 28, 1995 with the Draft EIS scheduled to be completed in 1995, the Final EIS in late 1995, and the Record of Decision in early 1996. The TWRS EIS will incorporate, by reference, activities planned for Hanford as part of the affected environment and cumulative environmental impacts section.

- **Hanford Reach EIS.** The lead Federal agency for this EIS is the Department of Interior (DOI). DOE is a consulting agency. The EIS addresses alternative approaches for management of the Columbia River from north of Richland, Washington to the Priest Rapids Dam. The Final EIS was issued in June 1994 and the Record of Decision is scheduled for completion in 1995. The TWRS EIS will incorporate, by reference, activities planned for Hanford as part of the affected environment and cumulative environmental impacts section.

In addition, DOE has completed 12 Environmental Assessments addressing activities related to various aspects of TWRS. As the TWRS EIS is being prepared, other Environmental Assessments may be completed. The TWRS EIS will incorporate, by reference, analysis completed in these Environmental Assessments regarding the affected environment, direct and cumulative environmental impacts, and supporting documentation relevant to TWRS. Relevant Environmental Assessments include:

- Collecting Crust Samples from Level Detectors in Tank 101-SY at the Hanford Site, DOE/EA-0479, U.S. DOE, Richland, Washington (DOE 1990);
- Characterization of Tank 241-SY-101, Hanford Site, Richland, Washington, DOE/EA-0511, U.S. DOE, Richland, Washington (DOE 1991);
- Vapor Space Sampling of Ferrocyanide Tanks, Hanford Site, Richland, Washington, DOE/EA-0533, U.S. DOE, Washington, DC (DOE 1991);
- Upgrading of the Ventilation System at the 241-SY Tank Farm, Hanford Site, Richland, Washington, DOE/EA-0581, U.S. DOE, Richland, Washington (DOE 1991);
- Intrusive Sampling and Testing of Ferrocyanide Tanks, DOE/EA-0596, U.S. DOE, Washington, DC (DOE 1992);
- Tank 241-SY-101 Equipment Installation and Operation to Enhance Tank Safety, DOE/EA-0802, U.S. DOE, Richland, Washington (DOE 1992);
- Proposed Pump Mixing Operations to Mitigate Episodic Gas Releases in Tank 241-SY-101, DOE/EA-0803, U.S. DOE, Washington, DC (DOE 1992);
- Thermocouple Tree System Installation and Operation in Non-Leaking Ferrocyanide Tanks, DOE/EA-0809, U.S. DOE, Washington, DC (DOE 1992);
- Tank 241-C-103 Organic Vapor and Liquids Characterization and Supporting Activities, Hanford Site, Richland, Washington, DOE/EA-0881, U.S. DOE, Richland, Washington (DOE 1993);
- Waste Tank Safety Program, Hanford Site, Richland, Washington, DOE/EA-0915, U.S. DOE, Richland, Washington (DOE 1993);
- Tank 241-C106 Sluicing, Hanford Site, Richland, Washington, DOE/EA-0933, U.S. DOE, Richland, Washington (DOE 1995); and
- Return of Isotope Capsules to the Waste Encapsulation and Storage Facility, Hanford Site, Richland, Washington, DOE/EA 0942, U.S. DOE, Washington D.C. (DOE 1994).

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